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Date of mailing (day/month/year) 28 January 2000 (28.01.00)	
International application No. PCT/AU99/00458	Applicant's or agent's file reference 413177C
International filing date (day/month/year) 11 June 1999 (11.06.99)	Priority date (day/month/year) 11 June 1998 (11.06.98)
Applicant BURNS, Peter	

1. The designated Office is hereby notified of its election made:

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INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6 :

A63B 71/10

A1

(11) International Publication Number:

WO 99/64121

(43) International Publication Date: 16 December 1999 (16.12.99)

(21) International Application Number: PCT/AU99/00458

(22) International Filing Date: 11 June 1999 (11.06.99)

(30) Priority Data:
PP 4098

11 June 1998 (11.06.98)

A11

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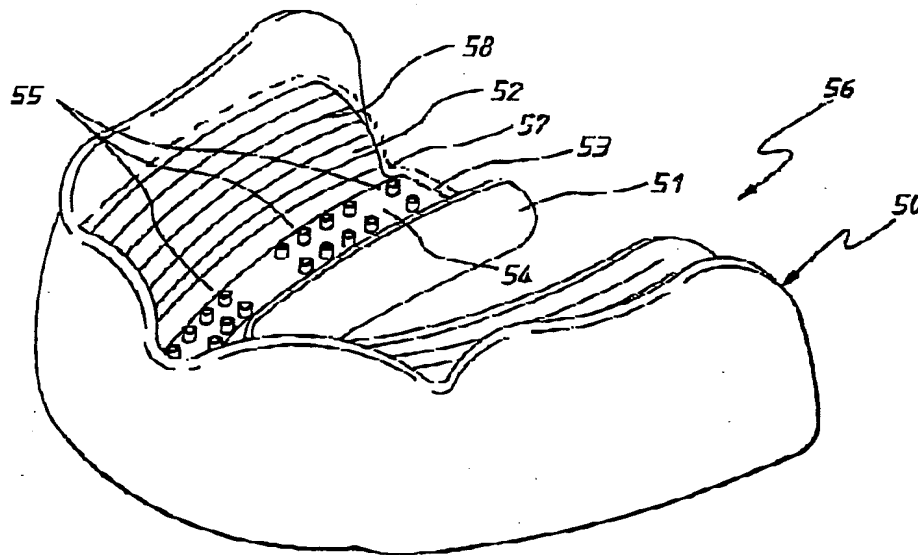
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NSW 2001 (A11).(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG,
BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB,
GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG,
KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK,
MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI,
SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA,
ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ,
UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD,
RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK,
ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI
patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR,
NE, SN, TD, TG).

Published

With international search report.

(54) Title: A MOUTHGUARD



(57) Abstract

A mouthguard (10) of "C" shaped configuration having a forward portion (11) from which there rearwardly diverges a pair of arms (12). The mouthguard (10) in transverse cross section is of a "U" shaped configuration. In one embodiment each arm (12) is provided with a ridge (22) which acts as a shield, while the forward portion (11) is thickened so as to provide a labial shield (23).

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A Mouthguard

Technical Field

The present invention relates to mouthguards and more particularly, but exclusively, to mouthguards used by sports participants.

Background of the Invention

Mouthguards have consisted of a number of types, including those constructed of thermoplastic material, which are heated (typically in hot water) and then applied to the user's mouth so that the mouthguard is moulded to fit the user's teeth and jaw. A more expensive type of mouthguard is that provided generally by dentists. The "custom fitted" dentist provided mouthguards are manufactured from an impression taken of the user's teeth and jaw. Plastic material is then formed in a mould generated from the impression. More recently, laminated pressure mouthguards have been made available.

The above discussed types of mouthguards fall short of providing the desired level of protection for the user.

Object of the Invention

It is the object of the present invention to overcome or substantially ameliorate the above disadvantage.

Summary of the Invention

There is disclosed herein a mouthguard of generally "C-shaped" configuration so as to provide a front portion and two arms diverging rearwardly from the front portion, the mouthguard being of a "U-shaped" transverse cross-section so as to provide an inner and an outer flange joined by a base.

The mouthguard described herein has a first inventive feature which includes the base having a lower surface providing a lower occlusal table which is generally perpendicular to the inner flange.

A second inventive feature described herein includes the base having an upper occlusal table which is inclined to the inner flange by an angle between 100 and 120 degrees.

A third inventive feature described herein includes a thickened portion of said outer flange being provided at said front part.

A fourth inventive feature described herein includes the base having a lower surface provided with a shield adjacent the outer flange extending substantially along each arm.

A fifth inventive feature described herein includes said base having an upper surface, with the forward portion thereof being raised relative to arm portions thereof.

A sixth inventive feature described herein includes the mouthguard being formed of a body having said "C-shaped" configuration, with said two arms having end extremities, said mouthguard further including a labial shield embedded in said front portion and extending therefrom through the two arms to adjacent the extremities thereof, said body and shield being formed of plastics material, with said shield being more rigid than said body.

Preferably the above mentioned shield is a single piece.

In a further preferred form said above mentioned shield includes a front part embedded in said front portion, and two rear parts separate to the front part, each rear part being located in a respective one of the arms.

A seventh inventive feature described herein includes said base being formed with deformable projections, which are plastically deformed to conform to the configuration of a user's teeth.

Brief Description of the Drawings

A preferred form of the present invention will now be described by way of example with reference to the accompanying drawings wherein:

Fig. 1 is a schematic front elevation of a mouthguard to generally enclose the upper teeth of a wearer;

Fig. 2 is a schematic rear elevation of the mouthguard of Fig. 1;

Fig. 3 is a schematic part sectioned side elevation of the mouthguard of Fig. 1;

Fig. 4 is a schematic top plan view of the mouthguard of Fig. 1;

Fig. 5 is a schematic side elevation of the mouthguard of Fig. 1;

Fig. 6 is a schematic bottom plan view of the mouthguard of Fig. 1;

Fig. 7 is a schematic top perspective view of the mouthguard of Fig. 1;

Fig. 8 is a schematic rear perspective view of the mouthguard of Fig. 1;

Fig. 9 is a schematic top plan view of a shield to be embedded in the body of a mouthguard;

Fig. 10 is a schematic bottom plan view of the shield of Fig. 9;

Fig. 11 is a schematic front plan view of the shield of Fig. 9;

Fig. 12 is a schematic rear elevation of the shield of Fig. 9;

Fig. 13 is a schematic end elevation of the shield of Fig. 9;

Fig. 14 is a schematic front elevation of a mouthguard having a body within which the shield of Fig. 9 is embedded;

Fig. 15 is a schematic rear elevation of the mouthguard of Fig. 14;

Fig. 16 is a top plan view of the mouthguard of Fig. 14;

Fig. 17 is a schematic side elevation of the mouthguard as illustrated in Fig. 16, sectioned along the lines 17-17;

Fig. 18 is a schematic side elevation of the mouthguard of Fig. 14;

Fig. 19 is a schematic bottom plan view of the mouthguard of Fig. 14;

Fig. 20 is a schematic perspective view of the mouthguard of Fig. 14;

Fig. 21 is a schematic front elevation of a shield set to be embedded in a mouthguard;

Fig. 22 is a schematic top plan view of the set of Fig. 22;

5 Fig. 23 is a schematic end elevation of the set of Fig. 21;

Fig. 24 is a schematic front elevation of a mouthguard with the shield set of Fig. 21 embedded therein;

Fig. 25 is a schematic rear elevation of the mouthguard of Fig. 24;

Fig. 26 is a schematic top plan view of the mouthguard of Fig. 24;

10 Fig. 27 is a schematic sectioned side elevation of the mouthguard as illustrated in Fig. 26, sectioned along the line 27-27;

Fig. 28 is a schematic side elevation of the mouthguard of Fig. 24;

Fig. 29 is a schematic bottom plan view of the mouthguard of Fig. 24;

Fig. 30 is a schematic perspective view of the mouthguard of Fig. 24; and

15 Fig. 31 is a schematic perspective view of a still further mouthguard.

Detailed Description of the Preferred Embodiment

In Figures 1 to 8 of the accompanying drawings, there is schematically depicted a mouthguard 10. The mouthguard 10 is of a "C-shaped" configuration so as to provide a front portion 11 from which there rearwardly diverges a pair of arms 12. The mouthguard 10 in transverse cross-section is of a "U-shaped" configuration so as to provide a inner flange 13 joined to an outer flange 14 by means of a base 15.

The upper edge of the flange 14 is provided with raised portions 16 and 17 arranged generally symmetrically relative to a plane passing through the line 3-3 of Fig. 4. In that regard it should be appreciated that the side elevation illustrated in Fig. 3 is the mouthguard sectioned along the line 3-3 of Fig. 4.

The base 15 of the mouthguard 10 includes upper surfaces 18 extending along each arm 12, with each surface 18 providing an occlusal table. The surfaces 18 are inclined to the internal surface 19 of the internal flange 13 by an angle between 100 and 120 degrees, preferably 110 degrees.

30 The base 15 is also provided with a pair of lower surfaces 20, each surface 20 extending along an arm 12, with each surface 20 providing a lower occlusal table. The surfaces 20 are inclined to the external surface 21 of the outer flange 14 by approximately 90 degrees.

Each arm 12 is also provided with a ridge 22 which acts as a shield.

35 The forward portion 11 is thickened so as to provide a labial shield 23 formed on the internal surface 24 of the outer flange 14. The shield 23 extends to the trough 25 located in the forward portion 11 between the flanges 13 and 14. The forward portion 11 is also provided with a raised or thickened incisal portion 26.

Preferably, the forward portion 11 is also provided with a front shield 28 in the form of a ridge.

The mouthguard 10 is formed of thermoplastics material which when heated to approximately 40 degrees or above becomes plastically mouldable if bitten. To provide for the flow of plastics material when being formed, each of the arms 12 is provided with a trough 27 into which the plastics material can flow.

In Figures 9 to 13 of the accompanying drawings there is schematically depicted a labial shield 30 to be embedded in the body 31 of the mouthguard 32 (Figures 14 to 20).

The shield 30 is of a "C-shaped" configuration so as to have a forward portion 33 with two rearwardly extending arms 34. The arms 34 have extremities 35. The shield 30 further has a pair of front arches 36, with each arm 34 having a pair of arches 37.

The body 31 is of a "C-shaped" configuration so as to provide a front portion 38 from which there rearwardly diverges a pair of arms 39. The body 31 in transverse cross-section is of a "U-shaped" configuration so as to provide an inner flange 40 joined to an outer flange 41 by means of a base 42. Each of the arms 39 has an extremity 43.

With the shield 30 embedded in the body 31, the board portion 33 is embedded in the board portion 38 of the body 31. The shield arms 34 extend within the body arm 39 so that their extremities 35 terminate just short of the arm extremities 43.

In Figures 21, 22 and 23 there is schematically depicted a labial shield 50 which comprises a set of shield members 51 and 52. The shield 50 is embedded (as seen in Figures 24 to 30) in a mouthguard body, such as the body 31 of the previous embodiment, with the shield 50 being an alternative to the shield 30. The same reference numerals have been employed in Figures 24 to 30, as Figures 14 to 20.

In Figure 31 there is schematically depicted a mouthguard 56 including a mouthguard body 50. The mouthguard body 50 is of a similar configuration to the previously described mouthguards. More particularly, the mouthguard body 50 has an inner flange 51 joined to an outer flange 52 by means of a base 53. The base 53 includes a layer 54 of material that is plastically deformable. More particularly, the layer 54 has a plurality of projections 55 which are plastically deformable in conform to the configuration of the user's teeth. In this embodiment the projections 54 are hollow and cylindrical in form. Received between the flanges 51 and 52 and covering the base 53 is a mouldable layer 57 constructed as follows. Firstly, the interior of the body 50 has applied to it an EVA copolymer coating. To this there is applied a thicker layer of vinyl containing polydimethylsiloxane. When the person to wear the mouthguard bites on the vinyl material, a dental impression results. However, the projections 55 also deform to provide a physical "key" to bind the vinyl layer to the body 50. In addition to, or as an alternative, the inner and outer flanges 51 and 52 may be provided with

ridges 58 to again retain the vinyl layer in position. In this respect it should be appreciated that the vinyl layer may still be "peeled" from within the body 50 should the need arise. For example, when mouthguards are not professionally fitted there is a danger that the mouthguard will be applied to a person having a dental appliance. If the vinyl layer is not removable with respect to the body, considerable difficulty would be encountered in removing the mouthguard.

As an alternative or in addition to the various keying means such as the projections 50 and ridges 58, the vinyl layer may be secured to the body 50 by means of an adhesive. The adhesive may be in liquid or tape form.

10 In manufacturing the mouthguard body 11, internal surfaces of the mould may be acid etched in order to produce roughened surfaces (for example on the internal surfaces of the flanges 51 and 52) to aid in engaging and retaining the vinyl layer within the body 50.

CLAIMS:

1. A mouthguard of generally "C-shaped" configuration so as to provide a front portion and two arms diverting rearwardly from the front portion, the mouthguard being of a "U-shaped" transverse cross-section so as to provide an inner and an outer flange joined by a base, wherein said base has a lower surface providing a lower occusal table which is generally perpendicular to the inner flange.
2. A mouthguard of generally "C-shaped" configuration so as to provide a front portion and two arms diverting rearwardly from the front portion, the mouthguard being of a "U-shaped" transverse cross-section so as to provide an inner and an outer flange joined by a base, wherein the base has an upper occusal table which is inclined to the inner flange by an angle of between 100 and 120 degrees.
3. A mouthguard of generally "C-shaped" configuration so as to provide a front portion and two arms diverting rearwardly from the front portion, the mouthguard being of a "U-shaped" transverse cross section so as to provide an inner and an outer flange joined by a base, wherein the mouthguard includes a thickened portion of said outer flange being provided at said front portion.
4. A mouthguard of generally "C-shaped" configuration so as to provide a front portion and two arms diverting rearwardly from the front portion, the mouthguard being of a "U-shaped" transverse cross-section so as to provide an inner and an outer flange joined by a base, wherein the base has a lower surface provided with a shield adjacent the outer flange extending substantially along each arm.
5. A mouthguard of generally "C-shaped" configuration so as to provide a front portion and two arms diverting rearwardly from the front portion, the mouthguard being of a "U-shaped" transverse cross-section so as to provide an inner and an outer flange joined by a base, wherein said base has an upper surface, with the forward portion thereof being raised relative to arm portions thereof.
6. A mouthguard of generally "C-shaped" configuration so as to provide a front portion and two arms diverting rearwardly from the front portion, the mouthguard being of a "U-shaped" transverse cross-section so as to provide an inner and an outer flange joined by a base, wherein the mouthguard includes a body of a "C-shaped" configuration, with said arms having end extremities, said mouthguard further including a labial shield embedded in said front portion and extending therefrom through the arms to adjacent extremities thereof, said body and shield being formed of plastics material, with said shield being more rigid than said body.
7. The mouthguard of claim 6, wherein the shield is a single piece.
8. The mouthguard of claim 6, wherein said shield is formed of a set of shield members including a front part embedded in said front portion, and two rear parts separate to the front part, each rear part being located in a respective one of the arms.

9. A mouthguard body of generally "C-shaped" configuration so as to provide a front portion and two arms diverging rearwardly from the front portion, the mouthguard body being of a "U-shaped" transverse cross-section so as to provide an inner and an outer flange joined by a base, wherein internal surfaces of the body are provided with key means to engage a mouldable material to be received within the body.

10. The mouthguard body of claim 9, wherein the keying means are deformable projections.

11. The mouthguard body of claim 10, wherein the deformable projections are located on said base.

12. The mouthguard of claim 9, 10 or 11 wherein said keying means are ridges.

13. The mouthguard body of claim 12, wherein said ridges are formed on internal surfaces of said inner and outer flanges.

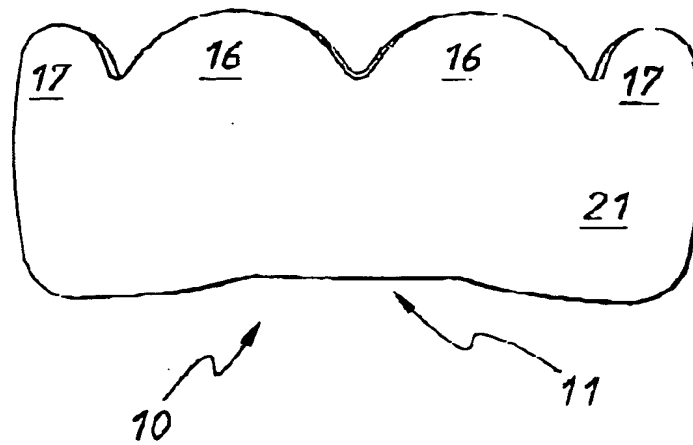
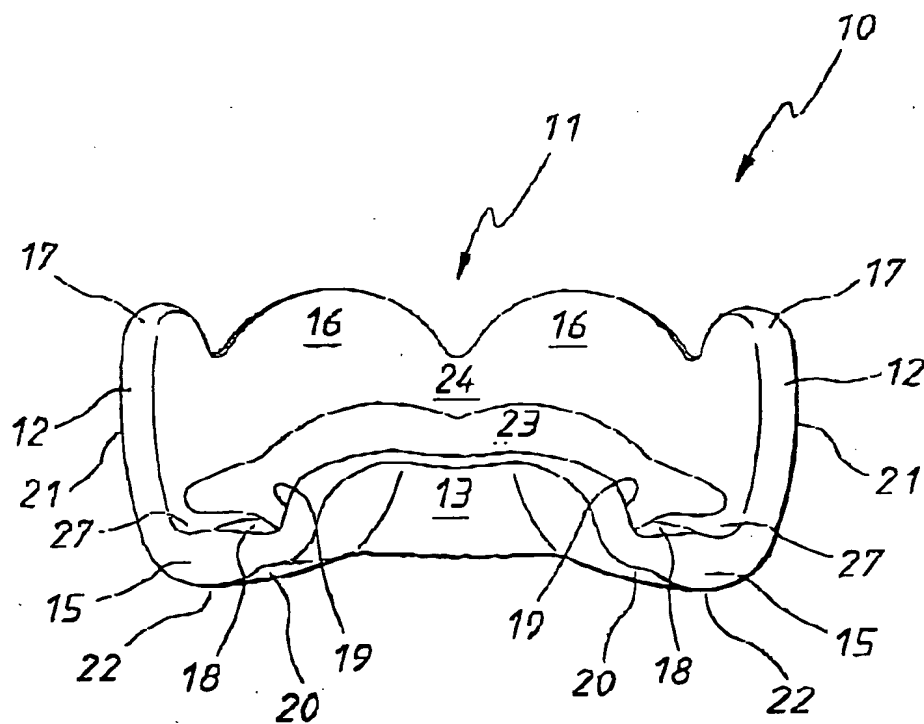
14. A mouthguard having a mouthguard body according to any one of claims 9 to 13, and mouldable material contained within the mouthguard body.

15. The mouthguard of claim 14 when appended to claim 10, wherein the projections are deformed to engage the mouldable material.

16. The mouthguard of claim 14 or 15 wherein the mouldable material is vinyl containing polydimethylsiloxane.

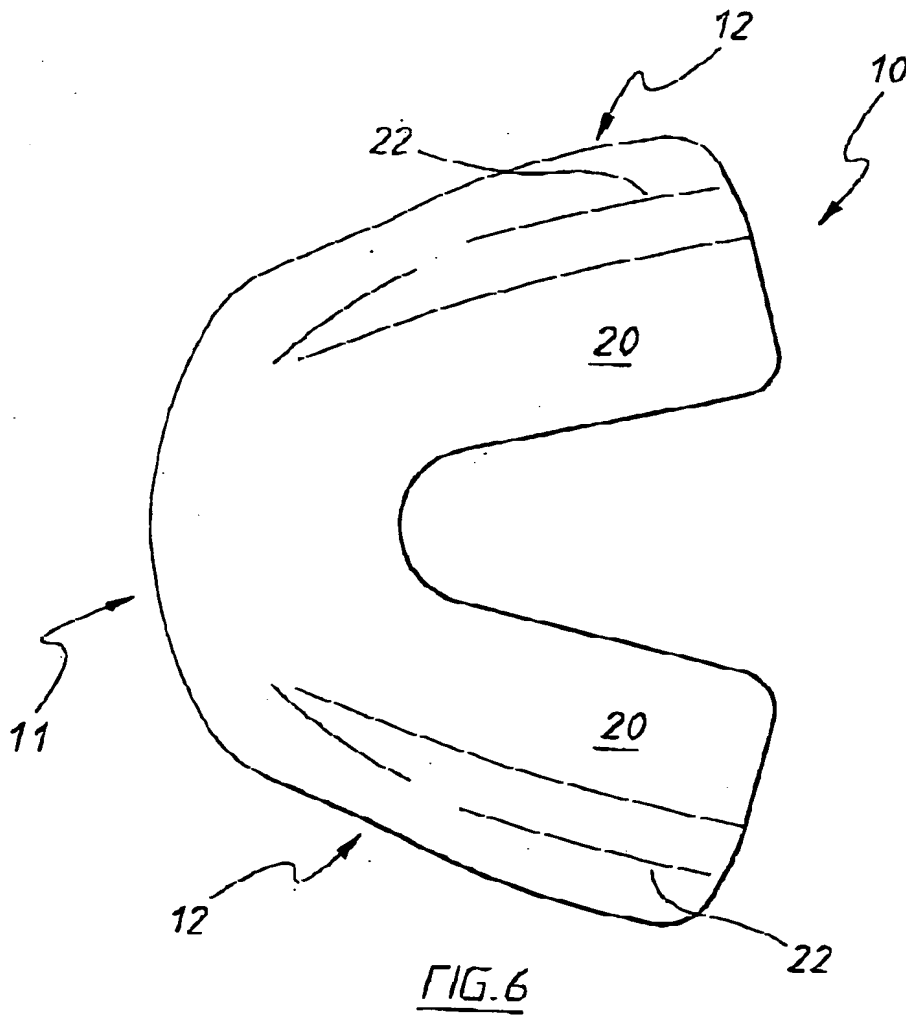
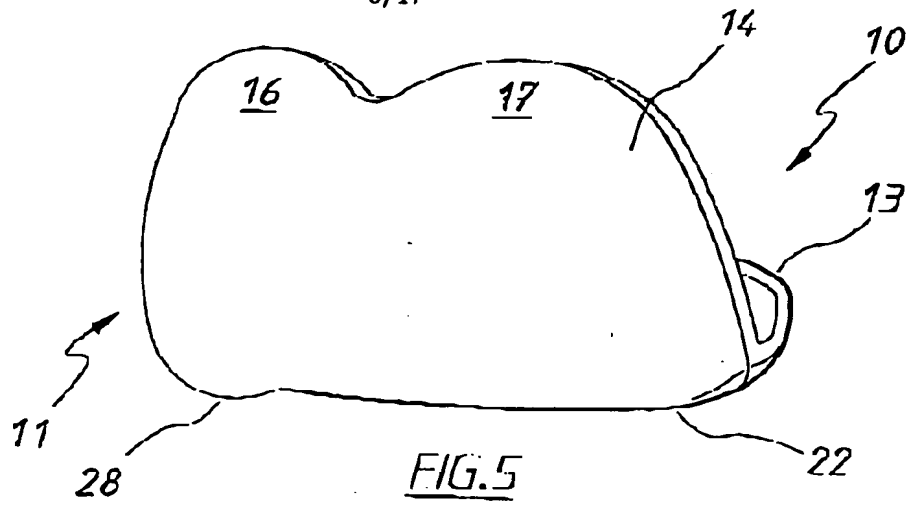
17. The mouthguard of claim 16, wherein the mouthguard body is formed of an EVA copolymer.

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FIG. 1FIG. 2



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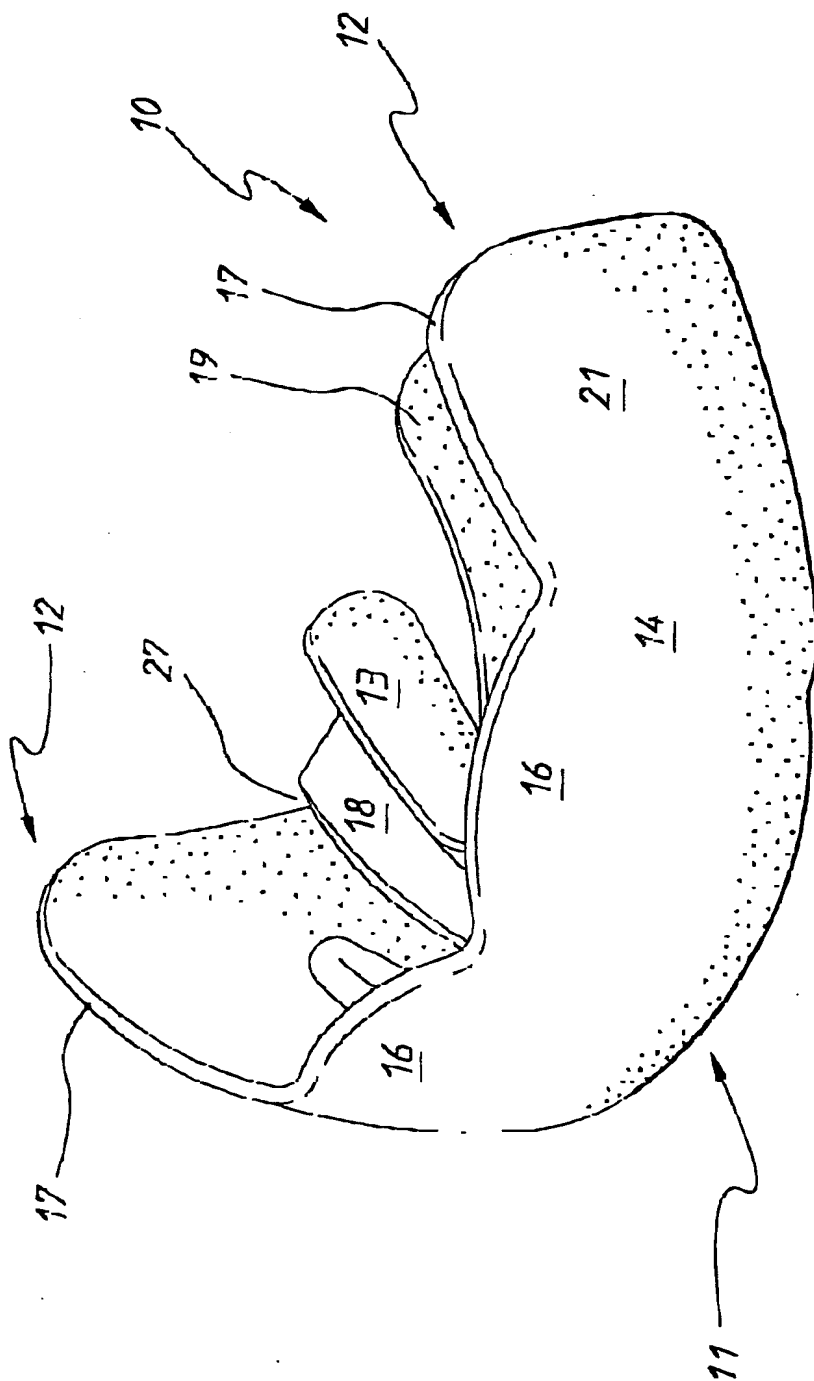


FIG. 7

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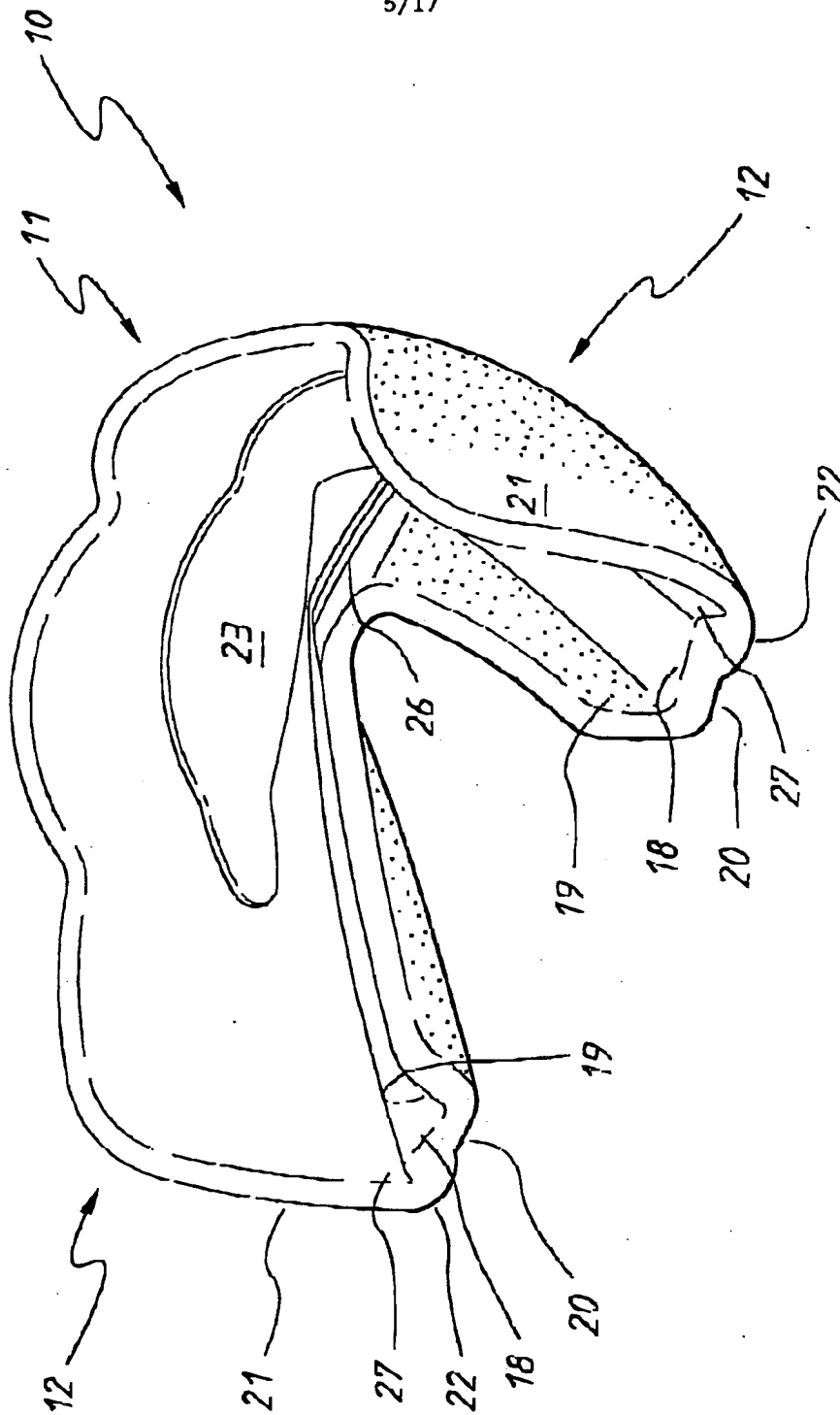
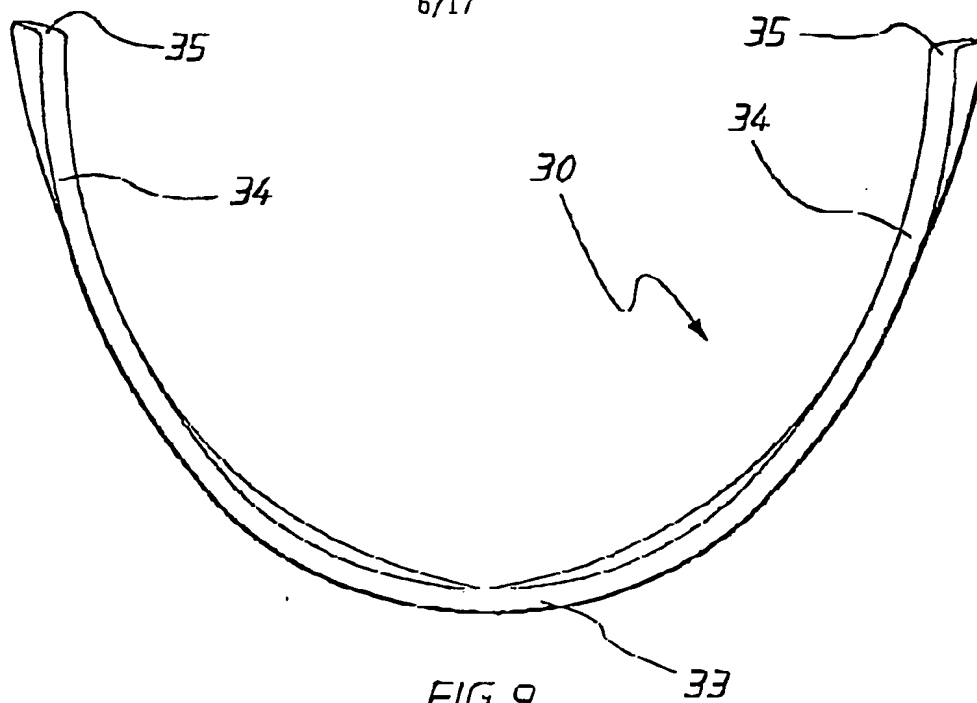
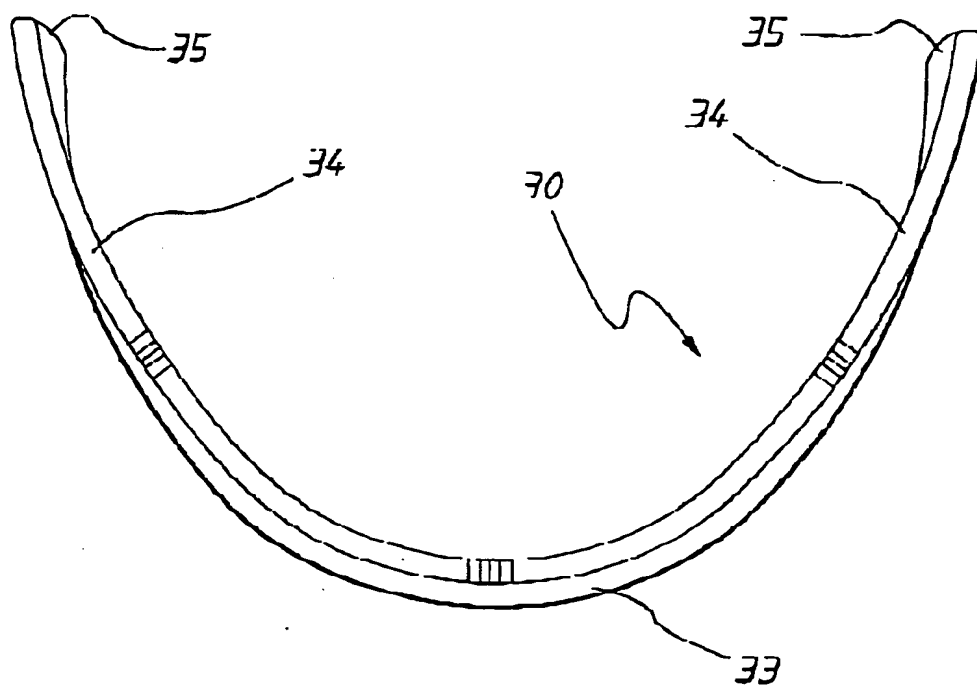
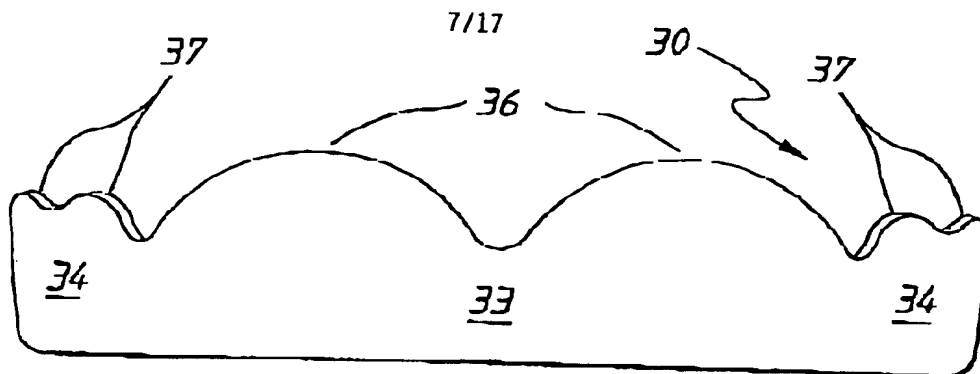
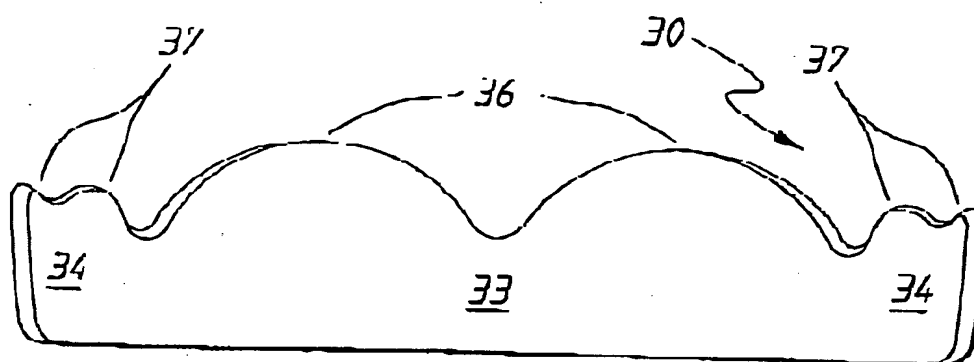
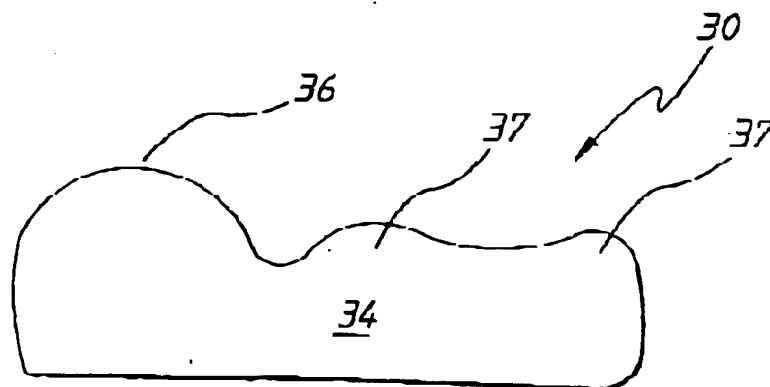


FIG. 8

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FIG. 9FIG. 10

FIG. 11FIG. 12FIG. 13

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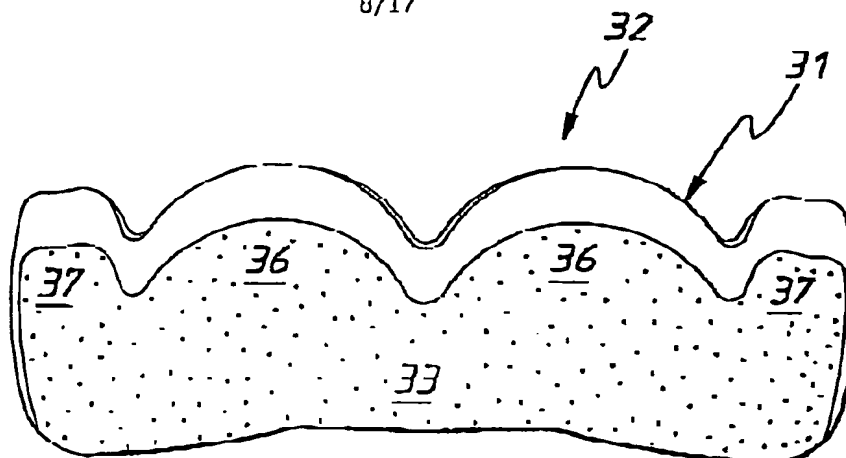


FIG. 14

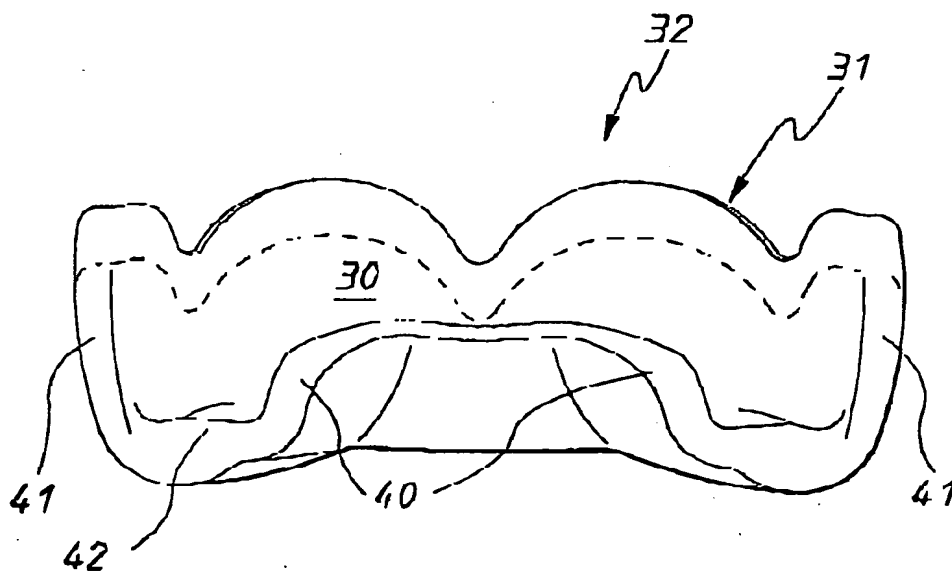
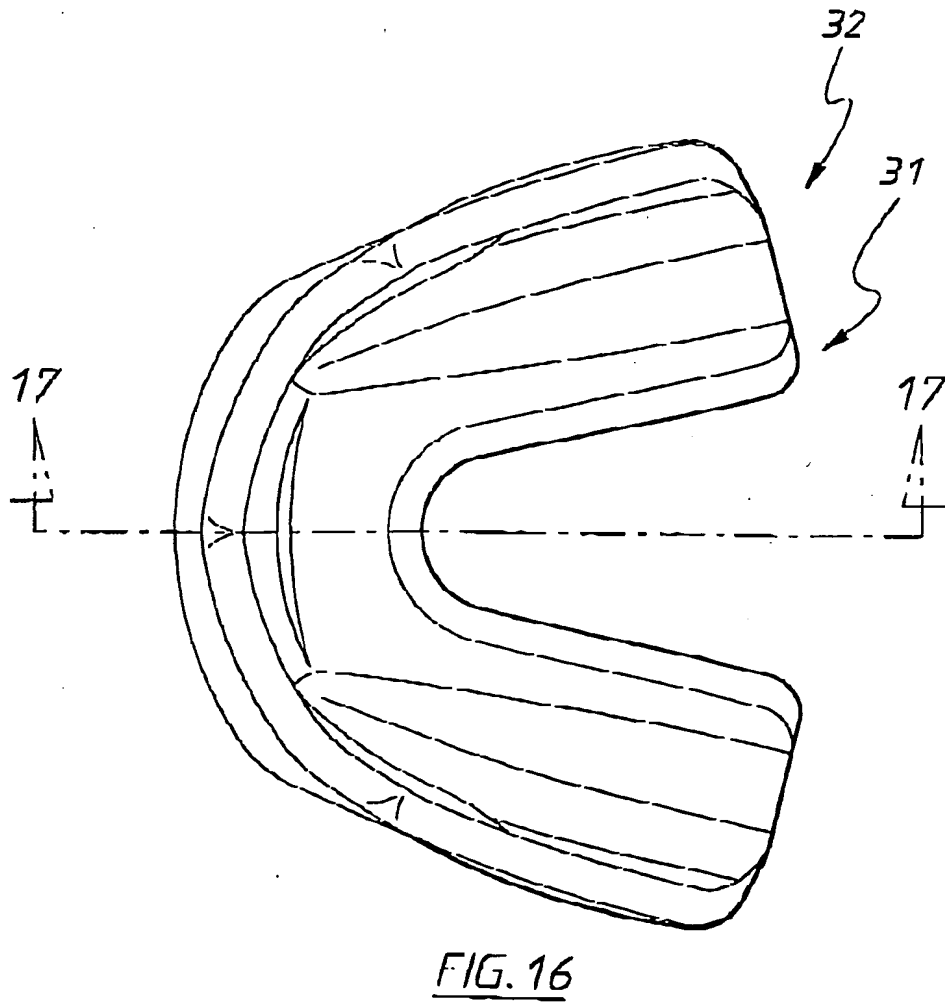
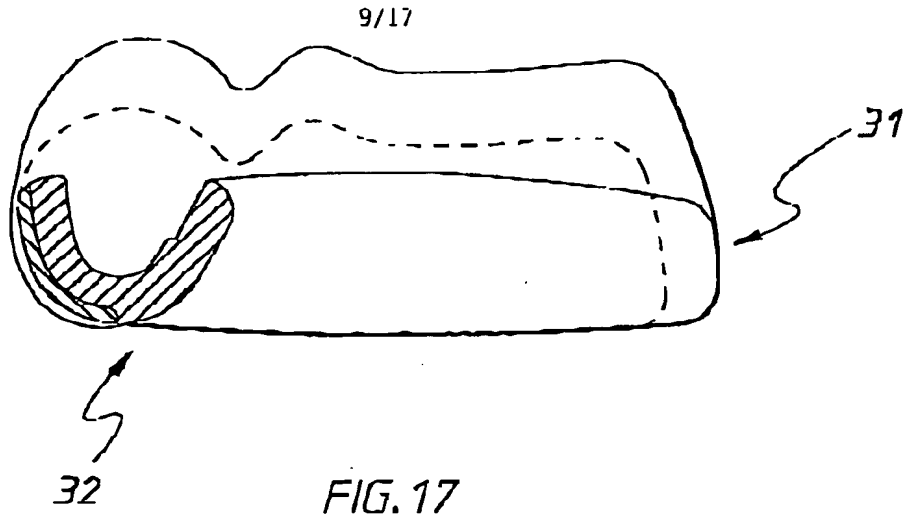


FIG. 15



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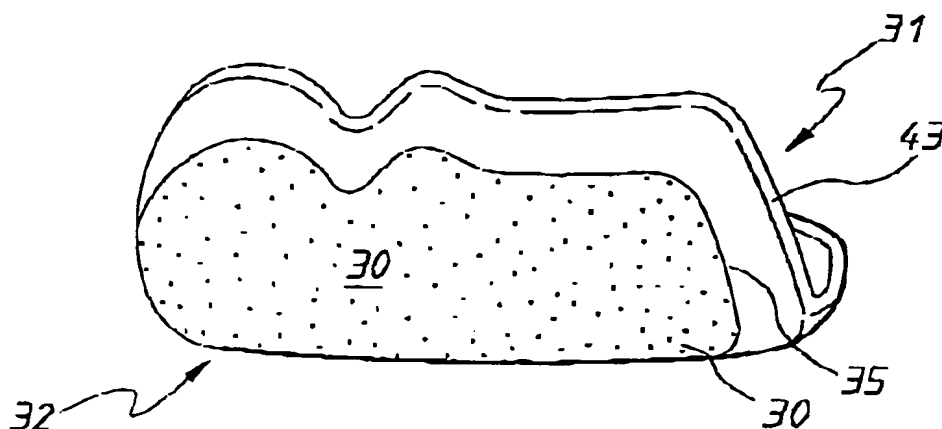


FIG. 18

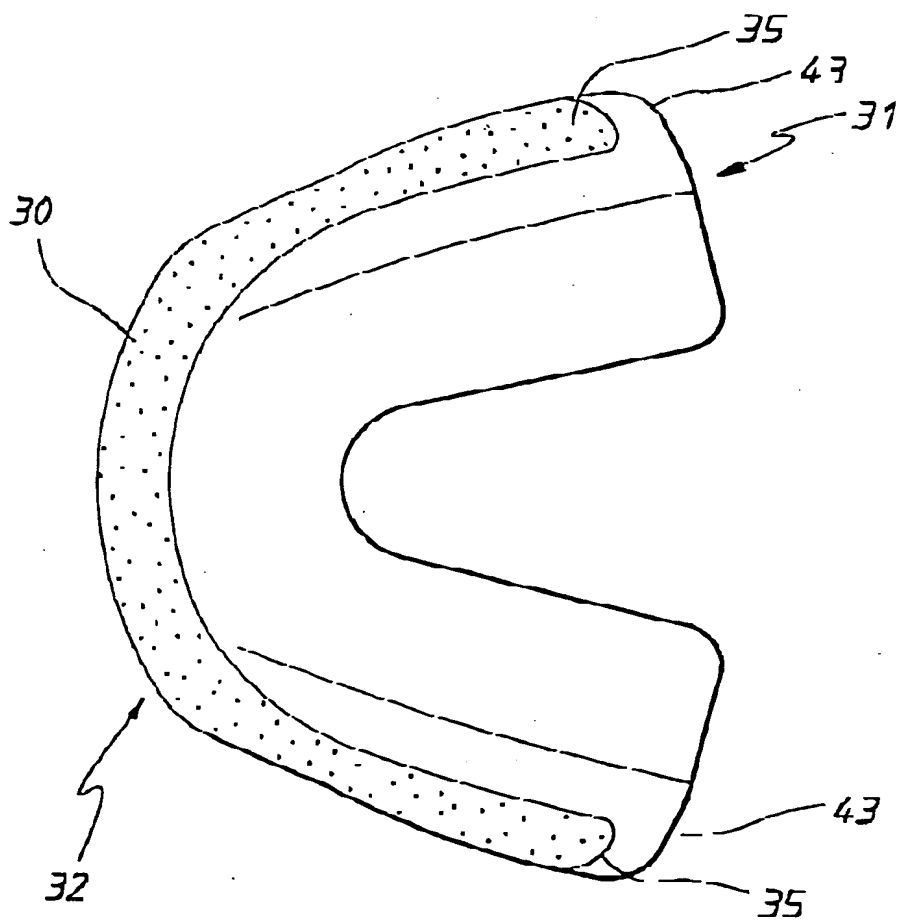
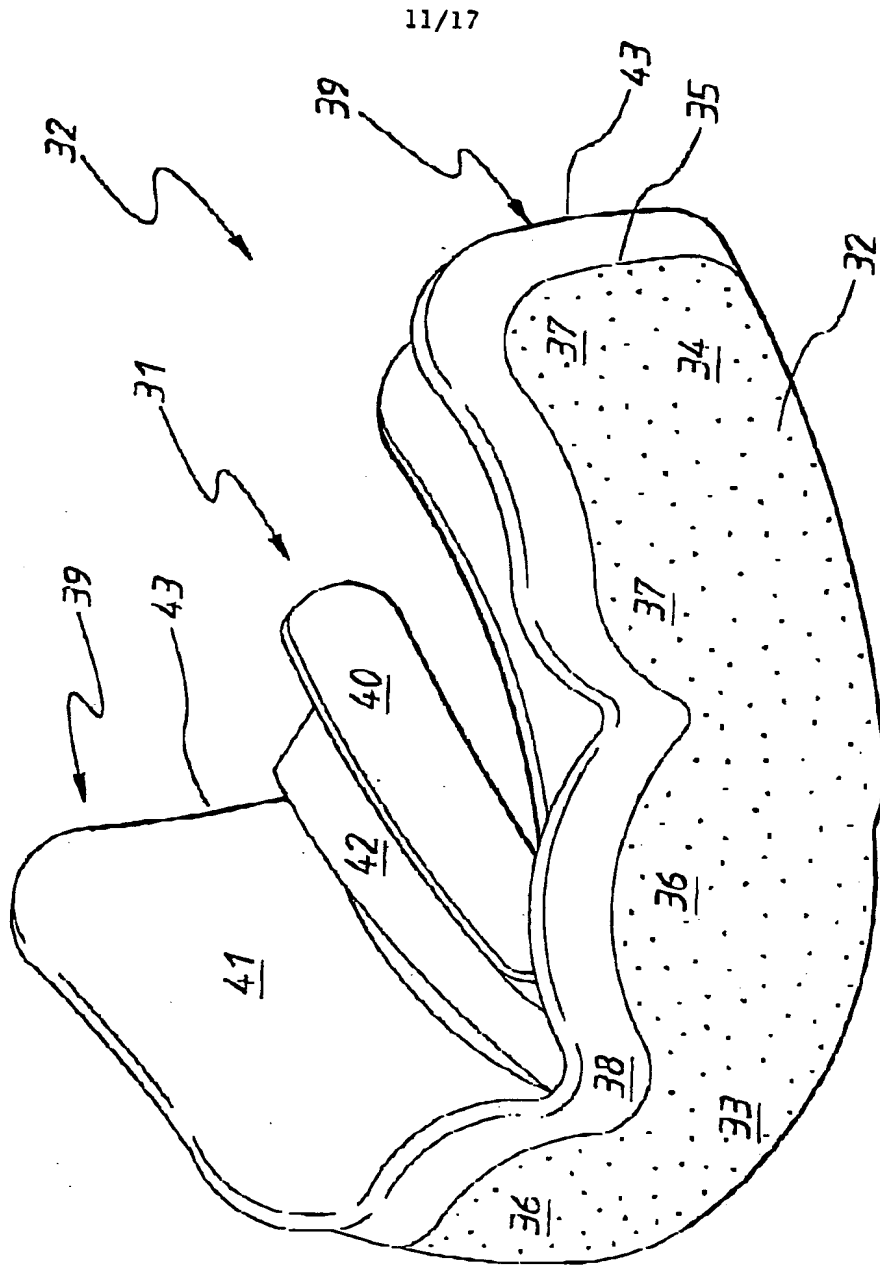


FIG. 19



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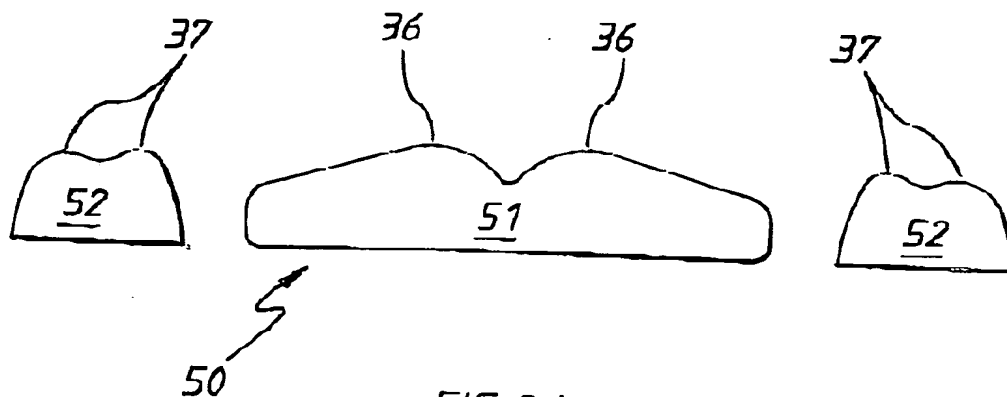


FIG. 21

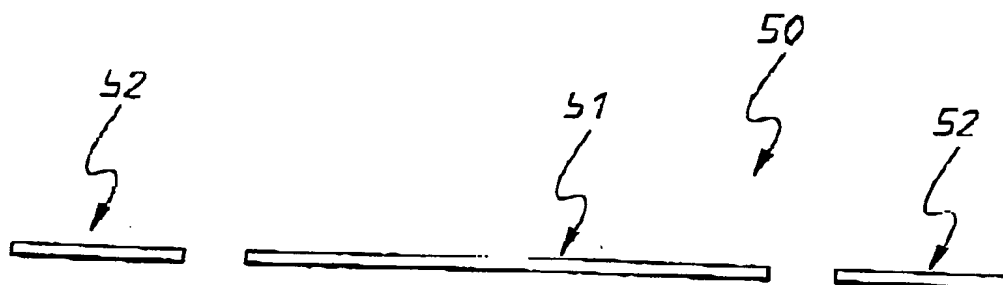


FIG. 22

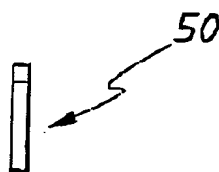


FIG. 23

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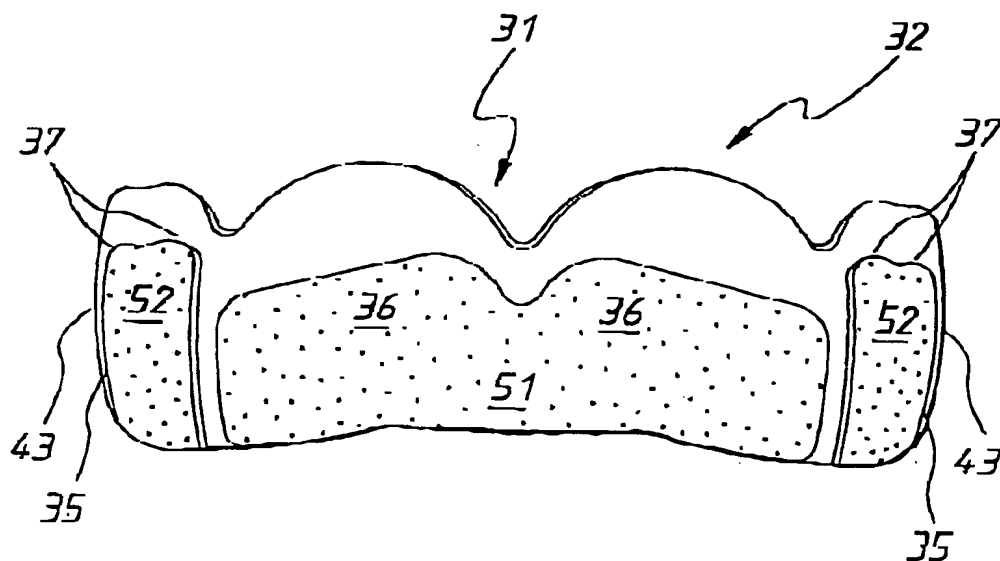


FIG. 24

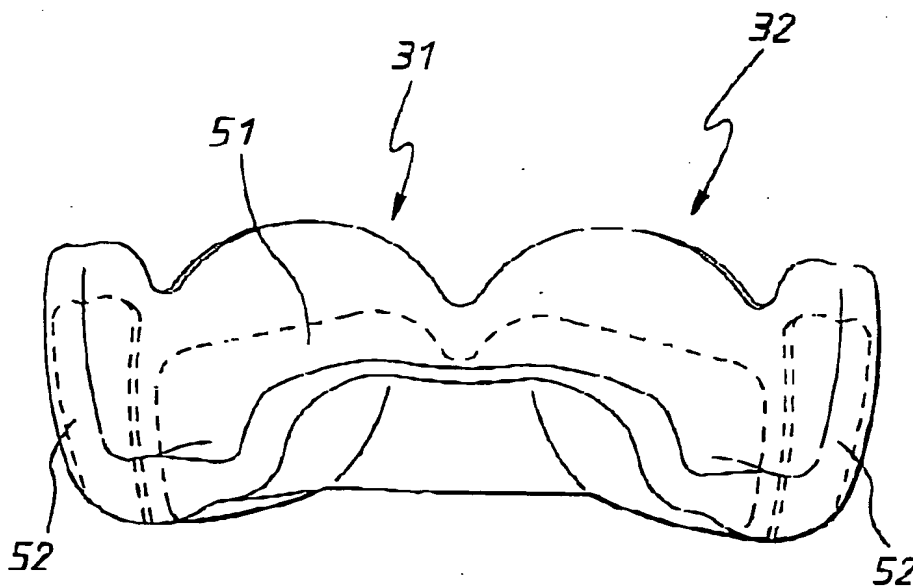


FIG. 25

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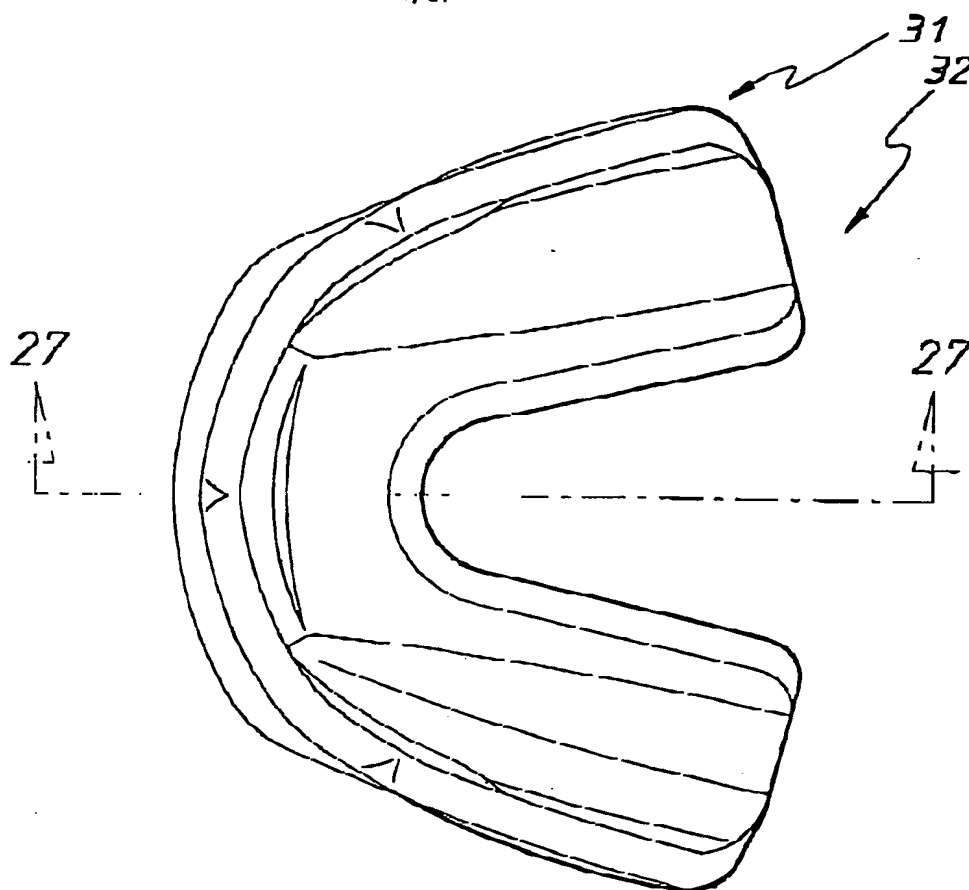


FIG. 26

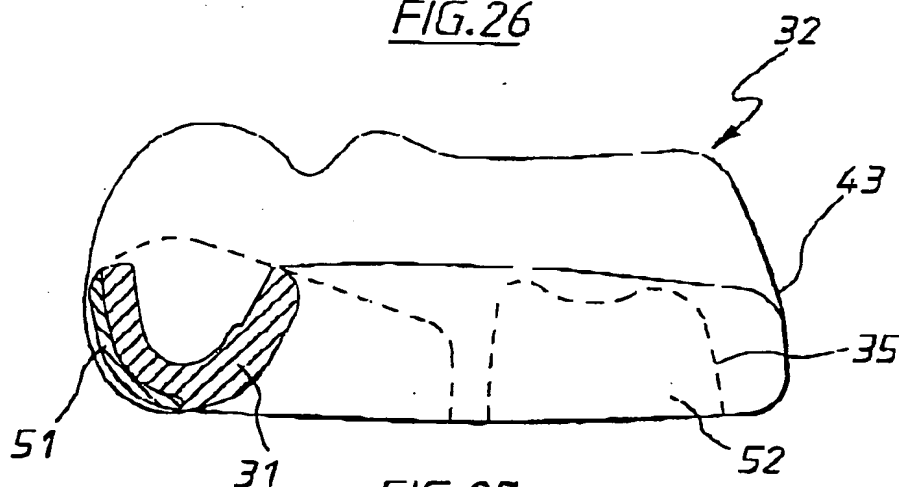


FIG. 27

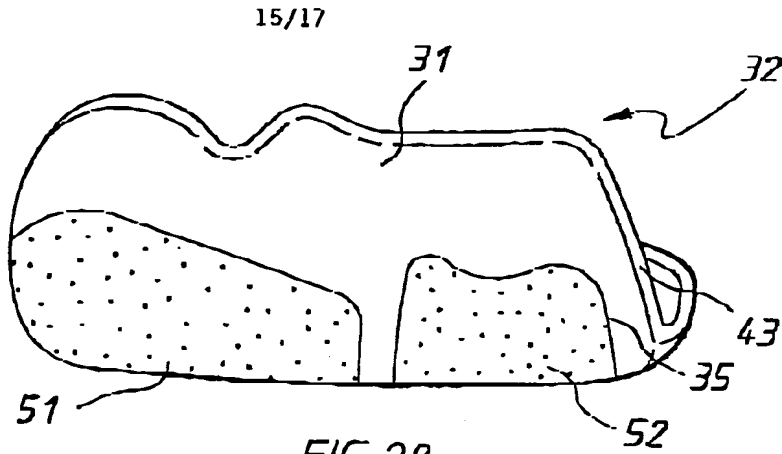


FIG. 28

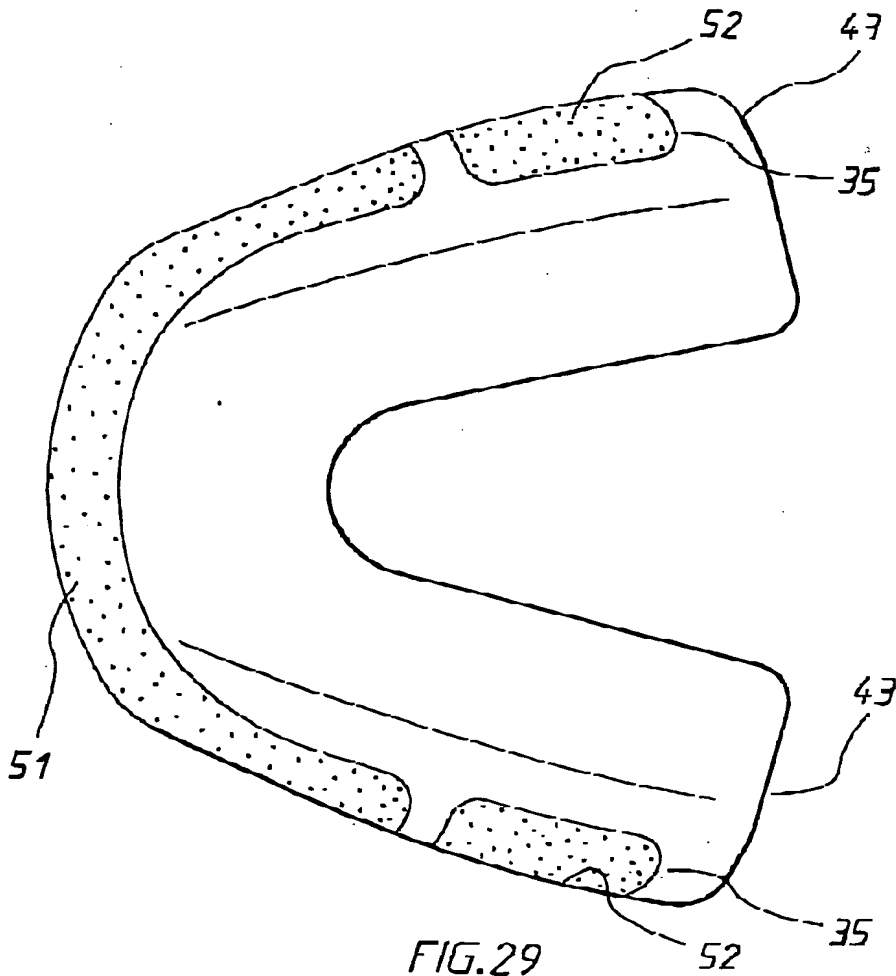


FIG. 29

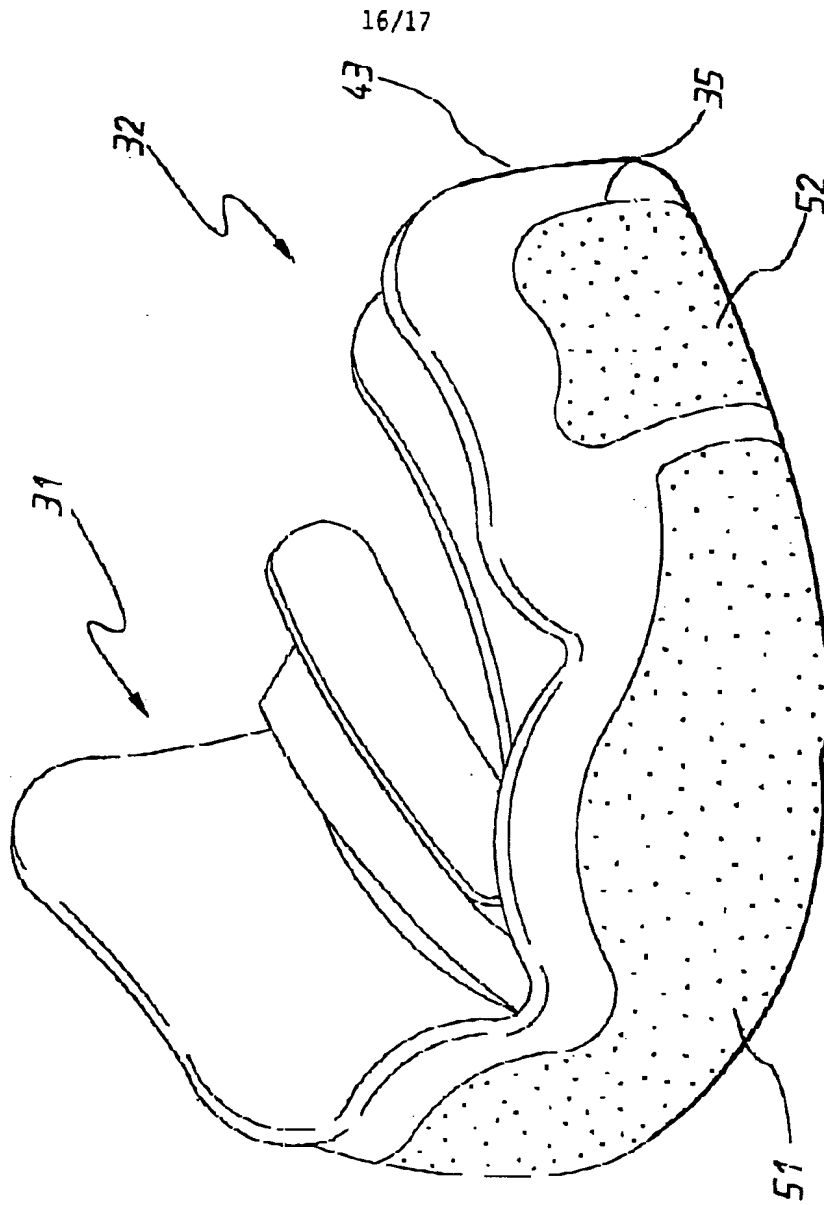


FIG. 30

FIG. 31

INTERNATIONAL SEARCH REPORT

International application No.
PCT/AU99/00458**A. CLASSIFICATION OF SUBJECT MATTER**Int Cl⁶: A63B 71/10

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHEDMinimum documentation searched (classification system followed by classification symbols)
A63B 71/10Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
AU: IPC AS ABOVEElectronic data base consulted during the international search (name of data base and, where practicable, search terms used)
WPAT Mouthguard**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 406 962 A (Adell) 18 April 1995 Whole document	1, 3
X	US 5 152 301 A (Kittelson et al.) 6 October 1992 Whole document	1, 5
X	US 5 406 963 A (Adell) 18 April 1995 Whole document	2, 9

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"Z" document member of the same patent family

Date of the actual completion of the international search
1 July 1999Date of mailing of the international search report
09 JUL 1999Name and mailing address of the ISA/AU
AUSTRALIAN PATENT OFFICE
PO BOX 200
WOOLLEN ACT 2606
AUSTRALIA
Facsimile No.: (02) 6285 3929

Authorized officer

CATHERINE REES
Telephone No.: (02) 6283 2555

INTERNATIONAL SEARCH REPORT

International application No.

PCT/AU99/00458

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 339 832 A (Kittelsen et al.) 23 August 1994 Whole document	4 - 6
A	EP 359 135 A (Sunstar Kabushiki Kaisha) 21 March 1990 Abstract and drawings	9 - 17

INTERNATIONAL SEARCH REPORT

International application No.

PCT/AU99/00458

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a)

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

The application has 7 independent claims (1 - 6 and 9) which do not contain a common novel feature.

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims
2. ☒ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest
- ☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT
Information on patent family membersInternational application No.
PCT/AU99/00458

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

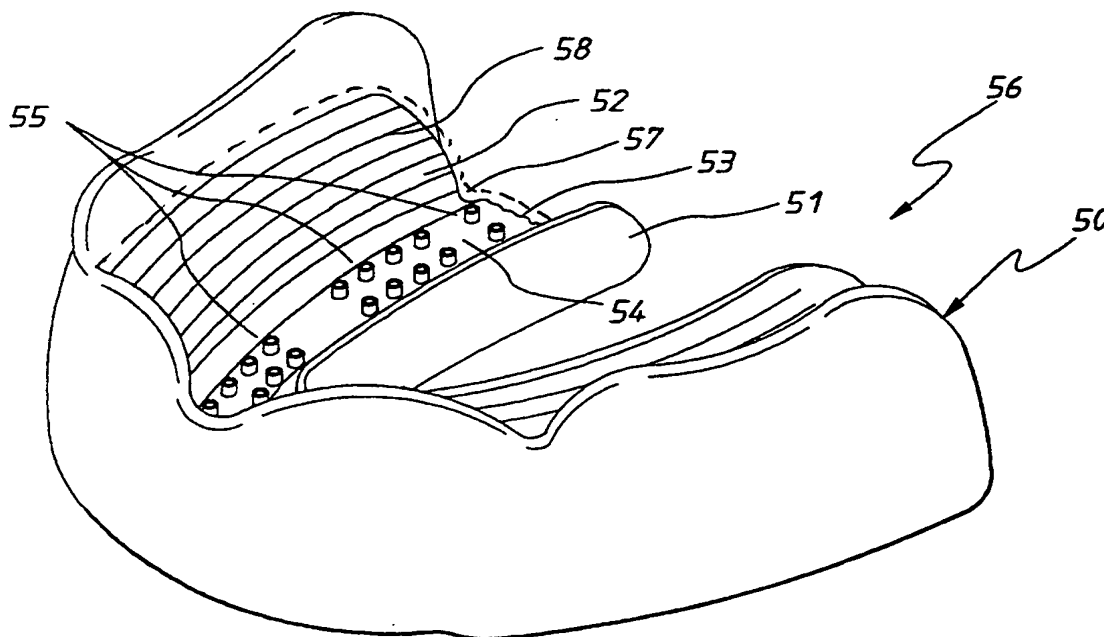
Patent Document Cited in Search Report		Patent Family Member			
US	5406962	US	5755233		
US	5755233	US	5406962		
US	5339832	AU	69114/94	CA	2106447
		WO	9427691	EP	652796
EP	359135	AU	41132/89	EP	359135
		NZ	230561	JP	2074274
END OF ANNEX					



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶ : A63B 71/10		A1	(11) International Publication Number: WO 99/64121
			(43) International Publication Date: 16 December 1999 (16.12.99)
(21) International Application Number: PCT/AU99/00458 (22) International Filing Date: 11 June 1999 (11.06.99) (30) Priority Data: PP 4098 11 June 1998 (11.06.98) AU (71) Applicant (for all designated States except US): SIGNATURE MOUTHGUARDS PTY. LIMITED [AU/AU]; Level 1, 9 Carlotta Street, Artamon, NSW 2064 (AU). (72) Inventor; and (75) Inventor/Applicant (for US only): BURNS, Peter [AU/AU]; Level 1, 9 Carlotta Street, Artamon, NSW 2064 (AU). (74) Agent: SPRUSON & FERGUSON; G.P.O. Box 3898, Sydney, NSW 2001 (AU).		(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published With international search report.	

(54) Title: A MOUTHGUARD



(57) Abstract

A mouthguard (10) of "C" shaped configuration having a forward portion (11) from which there rearwardly diverges a pair of arms (12). The mouthguard (10) in transverse cross section is of a "U" shaped configuration. In one embodiment each arm (12) is provided with a ridge (22) which acts as a shield, while the forward portion (11) is thickened so as to provide a labial shield (23).

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
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BF	Burkina Faso	GR	Greece	ML	Mali	TR	Turkey
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BY	Belarus	IS	Iceland	MX	Mexico	US	United States of America
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CG	Congo	KE	Kenya	NO	Norway	YU	Yugoslavia
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CM	Cameroon	KR	Republic of Korea	PT	Portugal		
CN	China	KZ	Kazakstan	RO	Romania		
CU	Cuba	LC	Saint Lucia	RU	Russian Federation		
CZ	Czech Republic	LI	Liechtenstein	SD	Sudan		
DE	Germany	LK	Sri Lanka	SE	Sweden		
DK	Denmark	LR	Liberia	SG	Singapore		
EE	Estonia						

INTERNATIONAL SEARCH REPORT

International application No.
PCT/AU99/00458

A. CLASSIFICATION OF SUBJECT MATTER																						
Int Cl ⁶ : A63B 71/10																						
According to International Patent Classification (IPC) or to both national classification and IPC																						
B. FIELDS SEARCHED																						
Minimum documentation searched (classification system followed by classification symbols) A63B 71/10																						
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched AU: IPC AS ABOVE																						
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) WPAT Mouthguard																						
C. DOCUMENTS CONSIDERED TO BE RELEVANT																						
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.																				
X	US 5 406 962 A (Adell) 18 April 1995 Whole document	1, 3																				
X	US 5 152 301 A (Kittelson et al.) 6 October 1992 Whole document	1, 5																				
X	US 5 406 963 A (Adell) 18 April 1995 Whole document	2, 9																				
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C <input checked="" type="checkbox"/> See patent family annex																						
<p>* Special categories of cited documents:</p> <table border="0"> <tr> <td>"A"</td> <td>document defining the general state of the art which is not considered to be of particular relevance</td> <td>"T"</td> <td>later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</td> </tr> <tr> <td>"E"</td> <td>earlier application or patent but published on or after the international filing date</td> <td>"X"</td> <td>document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</td> </tr> <tr> <td>"L"</td> <td>document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</td> <td>"Y"</td> <td>document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</td> </tr> <tr> <td>"O"</td> <td>document referring to an oral disclosure, use, exhibition or other means</td> <td>"&"</td> <td>document member of the same patent family</td> </tr> <tr> <td>"P"</td> <td>document published prior to the international filing date but later than the priority date claimed</td> <td></td> <td></td> </tr> </table>			"A"	document defining the general state of the art which is not considered to be of particular relevance	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention	"E"	earlier application or patent but published on or after the international filing date	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone	"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art	"O"	document referring to an oral disclosure, use, exhibition or other means	"&"	document member of the same patent family	"P"	document published prior to the international filing date but later than the priority date claimed		
"A"	document defining the general state of the art which is not considered to be of particular relevance	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention																			
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"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art																			
"O"	document referring to an oral disclosure, use, exhibition or other means	"&"	document member of the same patent family																			
"P"	document published prior to the international filing date but later than the priority date claimed																					
Date of the actual completion of the international search 1 July 1999		Date of mailing of the international search report 09 JUL 1999																				
Name and mailing address of the ISA/AU AUSTRALIAN PATENT OFFICE PO BOX 200 WODEN ACT 2606 AUSTRALIA Facsimile No.: (02) 6285 3929		Authorized officer CATHERINE REES Telephone No.: (02) 6283 2555																				

INTERNATIONAL SEARCH REPORT

International application No.

PCT/AU99/00458

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 339 832 A (Kittelsen et al.) 23 August 1994 Whole document	4 - 6
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INTERNATIONAL SEARCH REPORT

International application No.

PCT/AU99/00458

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a)

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

The application has 7 independent claims (1 - 6 and 9) which do not contain a common novel feature.

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims
2. ☒ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/AU99/00458

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report		Patent Family Member					
US	5406962	US	5755233				
US	5755233	US	5406962				
US	5339832	AU	69114/94	CA	2106447	EP	652796
		WO	9427691				
EP	359135	AU	41132/89	EP	359135	JP	2074274
		NZ	230561				
							END OF ANNEX

PCT

REQUEST

The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty.

For receiving Office use only

International Application No.

International Filing Date

Name of receiving Office and "PCT International Application"

Applicant's or agent's file reference
(if desired) (12 characters maximum)

413177C

Box No. I TITLE OF INVENTION
A Mouthguard

Box No. II APPLICANT

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (i.e. country) of residence if no State of residence is indicated below.)

SIGNATURE MOUTHGUARDS PTY LIMITED

Level 1

9 Carlotta Street

Artamon, New South Wales 2064

AUSTRALIA

☐ This person is also inventor.

Telephone No.

Facsimile No.

Teleprinter No.

State (i.e. country) of nationality:

AUSTRALIA

State (i.e. country) of residence:

AUSTRALIA

This person is applicant
for the purposes of:
☐ all designated
States

☒ all designated States except
the United States of America

☐ the United States
of America only

☐ the States indicated in the
Supplemental Box

Box No. III FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (i.e. country) of residence if no State of residence is indicated below.)

BURNS, Peter

Level 1, 9 Carlotta Street

Artamon New South Wales 2064

AUSTRALIA

This person is:

☐ applicant only

☒ applicant and inventor

☐ inventor only (If this
check-box is marked, do
not fill in below.)

State (i.e. country) of nationality:

AUSTRALIA

State (i.e. country) of residence:

AUSTRALIA

This person is applicant
for the purposes of:
☐ all designated
States

☐ all designated States except
the United States of America

☒ the United States
of America only

☐ the States indicated in the
Supplemental Box

☐ Further applicants and/or (further) inventors are indicated on a continuation sheet.

Box No. IV AGENT OR COMMON REPRESENTATIVE: OR ADDRESS FOR CORRESPONDENCE

The person identified below is hereby/has been appointed to act on behalf of the applicant(s) before the competent International Authorities as:

☒ agent

☐ common representative

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country)

SPRUSON & FERGUSON

GPO BOX 3898

Sydney

New South Wales 2001

AUSTRALIA

Telephone No.

(02) 9201 0777

Facsimile No.

(02) 9232 8555

Teleprinter No.

AA 23165

☐ Mark this check-box where no agent or common representative is/has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.

Form PCT/RO/101 (first sheet) (January 1997; reprint January 1998)

See Notes to the request form

[NAT:RE]10647:SMC

Box No. V

DESIGNATION OF STATES

The following designations are hereby made under Rule 4.9(a) (mark the applicable check-boxes; at least one must be marked):

Regional Patent

- ☒ AP ARIPO Patent: GH Ghana, GM Gambia, KE Kenya, LS Lesotho, MW Malawi, SD Sudan, SZ Swaziland, UG Uganda, ZW Zimbabwe, and any other State which is a Contracting State of the Harare Protocol and of the PCT
- ☒ EA Eurasian Patent: AM Armenia, AZ Azerbaijan, BY Belarus, KG Kyrgyzstan, KZ Kazakhstan, MD Republic of Moldova, RU Russian Federation, TJ Tajikistan, TM Turkmenistan, and any other State which is a Contracting State of the Eurasian Patent Convention and of the PCT
- ☒ EP European Patent: AT Austria, BE Belgium, CH and LI Switzerland and Liechtenstein, CY Cyprus, DE Germany, DK Denmark, ES Spain, FI Finland, FR France, GB United Kingdom, GR Greece, IE Ireland, IT Italy, LU Luxembourg, MC Monaco, NL Netherlands, PT Portugal, SE Sweden, and any other State which is a Contracting State of the European Patent Convention and of the PCT
- ☒ OA OAPI Patent: BF Burkina Faso, BJ Benin, CF Central African Republic, CG Congo, CI Côte d'Ivoire, CM Cameroon, GA Gabon, GN Guinea, GW Guinea-Bissau, ML Mali, MK Mauritania, NE Niger, SN Senegal, TD Chad, TG Togo, and any other State which is a member State of OAPI and a Contracting State of the PCT (if other kind of protection or treatment desired, specify on dotted line):

National Patent (if other kind of protection or treatment desired, specify on dotted line):

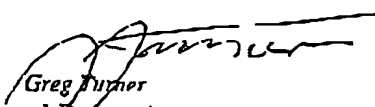
- | | |
|--|--|
| <input checked="" type="checkbox"/> AL Albania | <input checked="" type="checkbox"/> LS Lesotho |
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| <input checked="" type="checkbox"/> AT Austria | <input checked="" type="checkbox"/> LU Luxembourg |
| <input checked="" type="checkbox"/> AU Australia | <input checked="" type="checkbox"/> LV Latvia |
| <input checked="" type="checkbox"/> AZ Azerbaijan | <input checked="" type="checkbox"/> MD Republic of Moldova |
| <input checked="" type="checkbox"/> BA Bosnia and Herzegovina | <input checked="" type="checkbox"/> MG Madagascar |
| <input checked="" type="checkbox"/> BB Barbados | <input checked="" type="checkbox"/> MK The former Yugoslav Republic of Macedonia |
| <input checked="" type="checkbox"/> BG Bulgaria | <input checked="" type="checkbox"/> MN Mongolia |
| <input checked="" type="checkbox"/> BR Brazil | <input checked="" type="checkbox"/> MW Malawi |
| <input checked="" type="checkbox"/> BY Belarus | <input checked="" type="checkbox"/> MX Mexico |
| <input checked="" type="checkbox"/> CA Canada | <input checked="" type="checkbox"/> NO Norway |
| <input checked="" type="checkbox"/> CH and LI Switzerland and Liechtenstein | <input checked="" type="checkbox"/> NZ New Zealand |
| <input checked="" type="checkbox"/> CN China | <input checked="" type="checkbox"/> PL Poland |
| <input checked="" type="checkbox"/> CU Cuba | <input checked="" type="checkbox"/> PT Portugal |
| <input checked="" type="checkbox"/> CZ Czech Republic | <input checked="" type="checkbox"/> RO Romania |
| <input checked="" type="checkbox"/> DE Germany | <input checked="" type="checkbox"/> RU Russian Federation |
| <input checked="" type="checkbox"/> DK Denmark | <input checked="" type="checkbox"/> SD Sudan |
| <input checked="" type="checkbox"/> EE Estonia | <input checked="" type="checkbox"/> SE Sweden |
| <input checked="" type="checkbox"/> ES Spain | <input checked="" type="checkbox"/> SG Singapore |
| <input checked="" type="checkbox"/> FI Finland | <input checked="" type="checkbox"/> SI Slovenia |
| <input checked="" type="checkbox"/> GB United Kingdom | <input checked="" type="checkbox"/> SK Slovakia |
| <input checked="" type="checkbox"/> GD Grenada | <input checked="" type="checkbox"/> SL Sierra Leone |
| <input checked="" type="checkbox"/> GE Georgia | <input checked="" type="checkbox"/> TJ Tajikistan |
| <input checked="" type="checkbox"/> GH Ghana | <input checked="" type="checkbox"/> TM Turkmenistan |
| <input checked="" type="checkbox"/> GM Gambia | <input checked="" type="checkbox"/> TR Turkey |
| <input checked="" type="checkbox"/> HR Croatia | <input checked="" type="checkbox"/> TT Trinidad and Tobago |
| <input checked="" type="checkbox"/> HU Hungary | <input checked="" type="checkbox"/> UA Ukraine |
| <input checked="" type="checkbox"/> ID Indonesia | <input checked="" type="checkbox"/> UC Uganda |
| <input checked="" type="checkbox"/> IL Israel | <input checked="" type="checkbox"/> US United States of America |
| <input checked="" type="checkbox"/> IN India | <input checked="" type="checkbox"/> UZ Uzbekistan |
| <input checked="" type="checkbox"/> IS Iceland | <input checked="" type="checkbox"/> VN Viet Nam |
| <input checked="" type="checkbox"/> JP Japan | <input checked="" type="checkbox"/> YU Yugoslavia |
| <input checked="" type="checkbox"/> KE Kenya | <input checked="" type="checkbox"/> ZW Zimbabwe |
| <input checked="" type="checkbox"/> KG Kyrgyzstan | |
| <input checked="" type="checkbox"/> KP Democratic People's Republic of Korea | |
| <input checked="" type="checkbox"/> KR Republic of Korea | |
| <input checked="" type="checkbox"/> KZ Kazakhstan | |
| <input checked="" type="checkbox"/> LC Saint Lucia | |
| <input checked="" type="checkbox"/> LK Sri Lanka | |
| <input checked="" type="checkbox"/> LR Liberia | |

Check-boxes reserved for designating States (for the purposes of a national patent) which have become party to the PCT after issuance of this sheet

- ☒ AE United Arab Emirates
- ☒ ZA South Africa

Precautionary Designation Statement: In addition to the designations made above, the applicant also makes under rule 4.9(b) all other designations which would be permitted under the PCT except any designation(s) indicated in the Supplemental Box as being excluded from the scope of this statement. The applicant declares that those additional designations are subject to confirmation and that any designation which is not confirmed before the expiration of 15 months from the priority date is to be regarded as withdrawn by the applicant at the expiration of that time limit. (Confirmation of a designation consists of the filing of a notice specifying that designation and the payment of the designation and confirmation fees. Confirmation must reach the receiving Office within the 15-month time limit.)

Sheet 3

Box No. VI PRIORITY CLAIM		Further priority claims are indicated in the Supplemental Box <input type="checkbox"/>	
The priority of the following earlier application(s) is hereby claimed:			
Country <i>(in which, or for which, the application was filed)</i>	Filing Date <i>(day/month/year)</i>	Application No.	Office of filing <i>(only for regional or international application)</i>
item (1) Australia	11 June 1998 11/06/1998	PP4098	
item (2)			
item (3)			
Mark the following check-box if the certified copy of the earlier application is to be issued by the Office which for the purposes of the present international application is the receiving Office (a fee may be required): <input checked="" type="checkbox"/> The receiving Office is hereby requested to prepare and transmit to the International Bureau a certified copy of the earlier application(s) identified above as item(s): (1)			
Box No. VII INTERNATIONAL SEARCHING AUTHORITY			
Choice of International Searching Authority (ISA) (If two or more International Searching Authorities are competent to carry out the international search, indicate the Authority chosen; the two-letter code may be used). ISA/			
Earlier search Fill in where a search (international, international-type or other) by the International Searching Authority has already been carried out or requested and the Authority is now requested to base the international search, to the extent possible, on the results of that earlier search. Identify such search or request either by reference to the relevant application (or the translation thereof) or by reference to the search request. Country (or regional Office): _____ Date (day/month/year) _____ Number: _____			
Box No. VIII CHECK LIST			
This international application contains the following number of sheets: 1. request : 3 sheets 2. description : 5 sheets 3. claims : 2 sheets 4. abstract : 1 sheet 5. drawings : 17 sheets Total : 28 sheets		This international application is accompanied by the item(s) marked below. 1. <input type="checkbox"/> separate signed power of attorney 2. <input type="checkbox"/> copy of general power of attorney 3. <input type="checkbox"/> statement explaining lack of signature 4. <input type="checkbox"/> priority document(s) identified in Box No. VI as item(s): 5. <input checked="" type="checkbox"/> fee calculation sheet 6. <input type="checkbox"/> separate indications concerning deposited microorganisms 7. <input type="checkbox"/> nucleotide and/or amino acid sequence listing (diskette) 8. <input type="checkbox"/> other (specify):	
Figure No. 31 of the drawings (if any) should accompany the abstract when it is published.			
Box No. IX SIGNATURE OF APPLICANT OR AGENT			
Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the request). <div style="text-align: center; margin-top: 20px;">  Greg Fether Registered Patent Attorney SPRUSON & FERGUSON </div>			
For receiving Office use only			
1. Date of actual receipt of the purported international application: _____ 3. Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application: _____ 4. Date of timely receipt of the required corrections under PCT Article 11(2): _____ 5. International Searching Authority specified by the applicant: ISA/		2. Drawings <input type="checkbox"/> received: <input type="checkbox"/> not received: 6. <input type="checkbox"/> Transmittal of search copy delayed until search fee is paid	
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Date of receipt of the record copy by the International Bureau: _____			

This sheet is not part of and does not count as a sheet of the international application.

PCT

FEE CALCULATION SHEET

Annex to the Request

For receiving Office use only

International application No.

Applicant's or agent's
file reference

413177C

Date stamp of the receiving Office

Applicant

SIGNATURE MOUTHGUARDS PTY LIMITED

CALCULATION OF PRESCRIBED FEES

1. TRANSMITTAL FEE

100 T

2. SEARCH FEE

800 S

International search to be carried out by _____
(If two or more International Searching Authorities are competent in relation to the international application, indicate the name of the Authority which is chosen to carry out the international search.)

3. INTERNATIONAL FEE

Basic Fee

The international application contains 28 sheets
first 30 sheets

722 b₁

b₂

remaining sheets additional amount

Add amounts entered at b₁ and b₂ and enter total at B

722 B

Designation Fees

The international application contains 80 designations.

10 166 1660 D

number of designation amount of designation
Fees payable (maximum 11) fee

Add amounts entered at B and D and enter total at I
(Applicants from certain States are entitled to a reduction of 75% of the international fee. Where the applicant is for all applications are) so entitled the total to be entered at I is 25% of the sum of the amounts entered at B and D.)

2382 I

4. FEE FOR PRIORITY DOCUMENT

10 P

5. TOTAL FEES PAYABLE

Add amounts entered at T, S, I and P, and enter total in the TOTAL box.

3312

TOTAL

☐ The designation fees are not paid at this time

MODE OF PAYMENT

☐ authorization to charge deposit
account (see below)

☐ bank draft

☐ coupons

☒ cheque

☐ cash

☐ other (specify)

☐ postal money order

☐ revenue stamps

DEPOSIT ACCOUNT AUTHORIZATION (this mode of payment may not be available at all receiving Offices)

The RO/ _____ ☐

is hereby authorized to charge the total fees indicated above to my deposit account.

☐

is hereby authorized to charge any deficiency or credit any overpayment in the total fees indicated above to my deposit account.

☐

is hereby authorized to charge the fee for preparation and transmittal of the priority document to the International Bureau of WIPO to my deposit account.

Deposit Account Number

Date (day/month/year)

Signature

The demand must be filed directly with the competent International Preliminary Examining Authority or, if two or more Authorities are competent, with the one chosen by the applicant. The full name or two-letter code of that Authority may be indicated by the applicant on the line below:

IPEA/

PCT

CHAPTER II

DEMAND

under Article 31 of the Patent Cooperation Treaty;
the undersigned requests that the international application specified below be the subject of international preliminary examination according to the Patent Cooperation Treaty.

For International Preliminary Examining Authority use only

Identification of IPEA		Date of receipt of DEMAND	
Box No. I IDENTIFICATION OF THE INTERNATIONAL APPLICATION		Applicant's or agent's file reference 413177C	
International application No. PCT/AU99/00458	International filing date (day/month/year) 11 June 1999 (11/06/99)	(Earliest) Priority date (day/month/year) 11 June 1998 (11/06/98)	
Title of invention A MOUTHGUARD			
Box No. II APPLICANT(S)			
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.) SIGNATURE MOUTHGUARDS PTY. LIMITED Level 1, 9 Carlotta Street Artamon, New South Wales 2064 AUSTRALIA		Telephone No.:	
		Facsimile No. : 9437 4531	
		Teleprinter No. :	
State (i.e. country) of nationality: AUSTRALIA		State (i.e. country) of residence: AUSTRALIA	
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.) BURNS, Peter level 1, 9 Carlotta Street Artamon, New South Wales 2064 AUSTRALIA			
State (i.e. country) of nationality: AUSTRALIA		State (i.e. country) of residence: AUSTRALIA	
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)			
State (i.e. country) of nationality:		State (i.e. country) of residence:	
<input type="checkbox"/> Further applicants are indicated on a continuation sheet.			

Form PCT/IPEA/401 (first sheet) (January 1994)

See Notes to the demand form

Sheet No. 2

International application No.
PCT/AU99/00458

Box No. III AGENT OR COMMON REPRESENTATIVE, OR ADDRESS FOR CORRESPONDENCE

The following person is ☒ agent ☐ common representative
and ☒ has been appointed earlier and represents the applicant(s) also for international preliminary examination.
☐ is hereby appointed and any earlier appointment of (an) agent(s)/common representative is hereby revoked.
☐ is hereby appointed, specifically for the procedure before the International Preliminary Examining Authority, in addition to the agent(s)/common representative appointed earlier.

Name and address: *(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)*

Spruson & Ferguson
GPO Box 3898
Sydney, New South Wales 2001
AUSTRALIA

Telephone No. :
(02) 9207 0777

Facsimile No. :
(02) 9232 8555

Teleprinter No. :
AA 23165

☐ Mark this check-box when no agent or common representative is/has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.

Box No. IV STATEMENT CONCERNING AMENDMENTS

The applicant wishes the International Preliminary Examining Authority*

- (i) ☒ to start the international preliminary examination on the basis of the international application as originally filed.
(ii) ☐ to take into account the amendments under Article 34 of
 ☐ the description (amendments attached).
 ☐ the claims (amendments attached).
 ☐ the drawings (amendments attached).
(iii) ☐ to take into account any amendments of the claims under Article 19 filed with the International Bureau (a copy is attached).
(iv) ☐ to disregard any amendments of the claims made under Article 19 and to consider them as reversed.
(v) ☐ to postpone the start of the international preliminary examination until the expiration of 20 months from the priority date unless that Authority receives a copy of any amendments made under Article 19 or a notice from the applicant that he does not wish to make such amendments (Rule 69.1(d)). *(This check-box may be marked only where the time limit under Article 19 has not yet expired.)*

* Where no check-box is marked, international preliminary examination will start on the basis of the international application as originally filed or, where a copy of amendments to the claims under Article 19 and/or amendments of the international application under Article 34 are received by the International Preliminary Examining Authority before it has begun to draw up a written opinion or the international preliminary examination report, as so amended.

Box No. V ELECTION OF STATES

☒ The applicant hereby elects all eligible States *(that is, all States which have been designated and which are bound by Chapter II of the PCT)* except

(If the applicant does not wish to elect certain eligible States, the name(s) or country code(s) of those States must be indicated above)

Form PCT/PEA/401 (second sheet) (January 1994)

See Notes to the demand form

Sheet No. 3

International application No.
PCT/AU99/00458

Box No. VI CHECK LIST

The demand is accompanied by the following documents for the purposes of international preliminary examination:

- | | | |
|--|---|--------|
| 1. amendments under Article 34 | | |
| Description | : | sheets |
| Claims | : | sheets |
| Drawings | : | sheets |
| 2. letter accompanying amendments under Article 34 | : | sheets |
| 3. copy of amendments under Article 19 | : | sheets |
| 4. copy of statement under Article 19 | : | sheets |
| 5. other (specify) | : | sheets |

For International Preliminary
Examining Authority use only

Received

not received

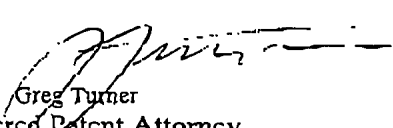


The demand is also accompanied by the item(s) marked below:

- | | |
|--|--|
| 1. <input type="checkbox"/> separate signed power of attorney | 4. <input checked="" type="checkbox"/> fee calculation sheet |
| 2. <input type="checkbox"/> copy of general power of attorney | 5. <input type="checkbox"/> other (specify): |
| 3. <input type="checkbox"/> statement explaining lack of signature | |

Box No. VII SIGNATURE OF APPLICANT, AGENT OR COMMON REPRESENTATIVE

Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the demand).


 Greg Turner
 Registered Patent Attorney
 SPRUSON & FERGUSON

For International Preliminary Examining Authority use only

1.	Date of actual receipt of DEMAND
2.	Adjusted date of receipt of demand due to CORRECTIONS under Rule 60.1(b):
3.	<input type="checkbox"/> The date of receipt of the demand is AFTER the expiration of 19 months from the priority date and Item 4 and 5, below, does not apply. <input type="checkbox"/> The applicant has been informed accordingly.
4.	<input type="checkbox"/> The date of receipt of the demand is WITHIN the period of 19 months from the priority date as extended by virtue of Rule 80.5
5.	<input type="checkbox"/> Although the date of receipt of the demand is after the expiration of 19 months from the priority date, the delay in arrival is EXCUSED pursuant to Rule 82.

For International Bureau use only

Demand received from IPEA on:

Form PCT/IPEA/401 (last sheet) (January 1994)

See Notes to the demand form

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

REC'D 07 JUN 2000

PCT

Applicant's or agent's file reference 413177C	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416).
International application No. PCT/AU99/00458	International filing date (<i>day/month/year</i>) 11 June 1999	Priority Date (<i>day/month/year</i>) 11 June 1998
International Patent Classification (IPC) or national classification and IPC Int. Cl. ⁷ A63B 71/10		
Applicant SIGNATURE MOUTHGUARDS PTY LIMITED et al		

1.	This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2.	This REPORT consists of a total of 4 sheets, including this cover sheet. <input type="checkbox"/> This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT). These annexes consist of a total of sheet(s).
3.	This report contains indications relating to the following items: I <input checked="" type="checkbox"/> Basis of the report II <input type="checkbox"/> Priority III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability IV <input checked="" type="checkbox"/> Lack of unity of invention V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement VI <input type="checkbox"/> Certain documents cited VII <input type="checkbox"/> Certain defects in the international application VIII <input type="checkbox"/> Certain observations on the international application

Date of submission of the demand 11 January 2000	Date of completion of the report 23 May 2000
Name and mailing address of the IPEA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaaustralia.gov.au Facsimile No. (02) 6285 3929	Authorized Officer CATHERINE REES Telephone No. (02) 6283 2555

I. Basis of the report

1. With regard to the elements of the international application:*

- ☒ the international application as originally filed.
- ☐ the description, pages , as originally filed,
 pages , filed with the demand,
 pages , received on with the letter of
- ☐ the claims, pages , as originally filed,
 pages , as amended (together with any statement) under Article 19,
 pages , filed with the demand,
 pages , received on with the letter of
- ☐ the drawings, pages , as originally filed,
 pages , filed with the demand,
 pages , received on with the letter of
- ☐ the sequence listing part of the description:
 pages , as originally filed
 pages , filed with the demand
 pages , received on with the letter of

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, was on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/fig.

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report

IV. Lack of unity of invention

1. In response to the invitation to restrict or pay additional fees the applicant has:

- ☐ restricted the claims.
- ☐ paid additional fees.
- ☐ paid additional fees under protest.
- ☐ neither restricted nor paid additional fees.

2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is

- ☐ complied with.
- ☒ not complied with for the following reasons:

The application has seven independent claims (1-6 and 9) which do not contain a common novel feature. All claims could be searched and examined without effort justifying an additional fee.

4. Consequently, the following parts of the international application were the subject of international preliminary examination in establishing this report:

- ☒ all parts.
- ☐ the parts relating to claims Nos.

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**1. Statement**

Novelty (N)	Claims 7, 8, 10 - 17	YES
	Claims 1 - 6, 9	NO
Inventive step (IS)	Claims 7, 8, 10 - 17	YES
	Claims 1 - 6, 9	NO
Industrial applicability (IA)	Claims 1 - 17	YES
	Claims	NO

2. Citations and explanations (Rule 70.7)

- a) US 5406962
- b) US 5152301
- c) US 5406963
- d) US 5339832
- e) EP 359135

Novelty (N) and Inventive Step (IS) claims 1 - 6 and 9:

The invention as described in claims 1 - 6 and 9 are not novel and do not involve an inventive step when compared with citations a) to d) above. These citations disclose all the features of these claims. In particular, citation a) discloses the features of claims 1 and 3, citation b) discloses the features of claims 1 and 5, citation c) discloses the features of claims 2 and 9 and citation d) discloses the features of claims 4 to 6. Citation e) demonstrates the state of the in relation to claims 9 - 17.

PATENT COOPERATION TREATY
PCT
INTERNATIONAL PRELIMINARY EXAMINATION REPORT
(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 413177C	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416).	
International application No. PCT/AU99/00458	International filing date (day/month/year) 11 June 1999	Priority Date (day/month/year) 11 June 1998
International Patent Classification (IPC) or national classification and IPC Int. Cl. ⁷ A63B 71/10		
Applicant SIGNATURE MOUTHGUARDS PTY LIMITED et al		

1.	This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.																
2.	<p>This REPORT consists of a total of 4 sheets, including this cover sheet.</p> <p><input type="checkbox"/> This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of _____ sheet(s).</p>																
3.	<p>This report contains indications relating to the following items:</p> <table border="0"> <tr> <td>I</td> <td><input checked="" type="checkbox"/> Basis of the report</td> </tr> <tr> <td>II</td> <td><input type="checkbox"/> Priority</td> </tr> <tr> <td>III</td> <td><input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td>IV</td> <td><input type="checkbox"/> Lack of unity of invention</td> </tr> <tr> <td>V</td> <td><input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td>VI</td> <td><input type="checkbox"/> Certain documents cited</td> </tr> <tr> <td>VII</td> <td><input type="checkbox"/> Certain defects in the international application</td> </tr> <tr> <td>VIII</td> <td><input type="checkbox"/> Certain observations on the international application</td> </tr> </table>	I	<input checked="" type="checkbox"/> Basis of the report	II	<input type="checkbox"/> Priority	III	<input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	IV	<input type="checkbox"/> Lack of unity of invention	V	<input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	VI	<input type="checkbox"/> Certain documents cited	VII	<input type="checkbox"/> Certain defects in the international application	VIII	<input type="checkbox"/> Certain observations on the international application
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VII	<input type="checkbox"/> Certain defects in the international application																
VIII	<input type="checkbox"/> Certain observations on the international application																

Date of submission of the demand 11 January 2000	Date of completion of the report 23 May 2000
Name and mailing address of the IPEA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaaustralia.gov.au Facsimile No. (02) 6285 3929	Authorized Officer CATHERINE REES Telephone No. (02) 6283 2555

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/AU99/00458

I Basis of the report**1. With regard to the elements of the international application:***☒ the international application as originally filed.☐ the description, pages , as originally filed,
pages , filed with the demand,
pages , received on with the letter of☐ the claims, pages , as originally filed,
pages , as amended (together with any statement) under Article 19,
pages , filed with the demand,
pages , received on with the letter of☐ the drawings. pages , as originally filed,
pages , filed with the demand,
pages , received on with the letter of☐ the sequence listing part of the description:
pages , as originally filed
pages , filed with the demand
pages , received on with the letter of**2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.**

These elements were available or furnished to this Authority in the following language which is:

☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).☐ the language of publication of the international application (under Rule 48.3(b)).☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).**3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, was on the basis of the sequence listing:**☐ contained in the international application in written form.☐ filed together with the international application in computer readable form.☐ furnished subsequently to this Authority in written form.☐ furnished subsequently to this Authority in computer readable form.☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished**4. ☐ The amendments have resulted in the cancellation of:**☐ the description, pages☐ the claims, Nos.☐ the drawings, sheets/fig.**5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).****

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/AU99/00458

IV. Lack of unity of invention

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- ☐ paid additional fees under protest
- ☐ neither restricted nor paid additional fees.

2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.

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- ☐ complied with.
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- ☒ all parts.
- ☐ the parts relating to claims Nos.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/AU99/00458

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**1. Statement**

Novelty (N)	Claims 7, 8, 10 - 17	YES
	Claims 1 - 6, 9	NO
Inventive step (IS)	Claims 7, 8, 10 - 17	YES
	Claims 1 - 6, 9	NO
Industrial applicability (IA)	Claims 1 - 17	YES
	Claims	NO

2. Citations and explanations (Rule 70.7)

- a) US 5406962
- b) US 5152301
- c) US 5406963
- d) US 5339832
- e) EP 359135

Novelty (N) and Inventive Step (IS) claims 1 - 6 and 9:

The invention as described in claims 1 - 6 and 9 are not novel and do not involve an inventive step when compared with citations a) to d) above. These citations disclose all the features of these claims. In particular, citation a) discloses the features of claims 1 and 3, citation b) discloses the features of claims 1 and 5, citation c) discloses the features of claims 2 and 9 and citation d) discloses the features of claims 4 to 6. Citation e) demonstrates the state of the art in relation to claims 9 - 17.